



# My Book Of **Computer**

**7**

***Teacher's  
Resource Book***

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## LESSON 1: THE EVIL WORLD OF HACKERS

### LESSON OBJECTIVES

1. What is hacking?
2. Explaining/Classifying the types of hackers
3. To know hacking tools and techniques
4. Introduction to ethical hacking

### LESSON STARTERS

There are boundaries defining dos and the (morals/ethics/rules) in lives, such boundaries are also there in the cyberworld. Start explanation, by introducing ethical values and effect of unethical doings/deeds/practices in our social lives. Relate the discussion with the actions of bad hackers. Your lesson also concerns with the theft of information. In real life, people normally steal articles but on the internet there is primarily information to steal. But how can information theft lead to harm? Basically hacking is a method designed to solve problem that combines resourcefulness, logic, creativity and study. This method has a dark as well as bright side to it, depending on the intention of the person who uses this method.

### TEACHING STRATEGY

Ask your students why this style of stealing or accessing private information has come to be known as hacking.

Let them know the meaning of the word “hack” in the English language. To hack something, generally, means to cut somebody/something with rough, heavy blows. Like woodcutters hack the wood of trees. Or when someone has to cross very dense foliage in a jungle for instance, they have to hack their way through the obstructing branches and leaves.

It will help your students make sense of how the same word has been used to describe the nature of the action of an evil-minded programmer trying to breach protected information and steal it.

Take the learner gradually through each section of the lesson by jotting salient points on the whiteboard. For instance, you may list the kinds of hackers before starting your lecture.

### EXTENDED TEACHING

#### Net Extra

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### SUPPORT MATERIAL

Visit the following online links for more learning and teaching information about this lesson:

### ANSWERS TO COMPREHENSION ASSESSMENT

#### 1. Explain hacking precisely in your own words.

Hacking is a technical procedure that is meant to access and manipulate a computer system. Hacking allows an outsider to make unwarranted changes to the data stored either on a computer system or in a web-space/the internet/the cloud. But, a hacking tactic may also be used to determine a loophole in a



computer system so it may be made secure against a hacking attack. Unwarranted changes done by mischievous hackers could either be to steal (identity theft) or private data.

## 2. What are the benefits of hacking?

Hacker is someone who practices unlawful acts on the internet but there are hackers who use their skills for good intents. Some hacking benefits that can be looked at:

Hackers have an important role to play in developing computer and internet technology. To properly be a hacker one needs to be an efficient computer programmer. Much of open-source code is produced, tested and improved by hackers. There are collaborative computer programming events, affectionately referred to as “Hackathons”, held for this purpose.

It is much easier for hackers to point out flaws in new software and operating systems. Every time a hacker rips through a security gap or flaw in a system. This in turn encourages most companies to be more careful in the future.

## 3. What are the types of malicious programs that are part of hacking and damage our computers?

These types of programs are as follows:

### Trojan Horses

Hackers use Trojan Horses to fool users by masking an application as if it were a usual computer program/utility/software.

### Computer Viruses

These are self-replicating programs which behave in the same way as biological viruses do. These spread by inserting copies of themselves into executable codes or digital documents.

### Computer Worms

These are also self-replicating programs but can spread through computer networks without any user intervention. These do not need to attach to an existing program or codes to do their damage.

### Rootkits

With a rootkit program, a hacker can subvert the control of your entire operating system and not just its applications. This allows them to retrieve data from remote locations. Such a program is hard to detect even with anti-virus or anti-malware programs because it hides its installation and also prevents being removed by subverting standard system security.

### Packet Analyzers

Also called packet sniffers, these capture data physically from the network in the form of data packets. Such hacker-controlled programs can be used to capture passwords and other data in transit over a network.

## 4. Which hacking technique do you think is most effective in attacking a large number of computers?

Computer worms are most effective in attacking a large number of computers. This because they can spread over a network easily.

## 5. What is ethical hacking?

Ethical hacking is the practice of using hacking methods to counter the damage brought on by black hat hackers. This kind of hacking is aimed at protecting highly confidential data by designing systems which are impenetrable and identifying the weaknesses in an existing system.

**LESSON 2: ENCRYPTION: KEEPING THE HACKERS AT BAY****LESSON OBJECTIVES**

1. Introducing to the class the process of encryption
2. Familiarizing the learner with how encryption is carried out on files in Windows
3. Learning how Word, Excel and PowerPoint documents are encrypted
4. Learning how all the content in a hard drive can be encrypted
5. Showing the student how one's internet connection and traffic may be encrypted

**LESSON STARTERS**

You may begin by talking to the class about how people have been storing valuables over time. The lesson deals with theft and methods in which theft can be avoided. You will have to take your student into the idea of a new dimension of theft i.e. theft of data stored inside a computer. The following questions can serve to initiate the student into the subject at hand:

- i. What value can stored data have for us?
- ii. Why should we guard stored data?
- iii. What could a hacker do with stolen data?
- iv. Why do hackers want to steal protected data in the first place?
- v. Do you think hacking could be fun?

**TEACHING STRATEGY**

The major theme in the lesson is encryption. You will need to clarify the meaning of this word for students. Encryption can also be referred to as "cryptography". Ask the class if anyone knows what the code is. When we talk about encrypting any data stored in a computer, it is done by a code.

Encrypting data means using mathematical techniques to first encrypt and then decrypt data while it's being sent or being stored electronically. Encryption is secret writing or the writing of data in the form of codes to ensure its privacy.

Try finding a diagram like the one given on page 9 from the internet and arrange for a multimedia presentation if possible. You could even pick a student who has an affinity for drawing and ask for the diagram to be drawn on the whiteboard.

In the computer lab, let the students take some time to get a hang of the windows which open step by step as EFS (Encrypting File System) is used.

It would be helpful for the learner to be given a chance to create a simple Word document and then follow the steps stated in the upper half of page 11.

Practice full-disk encryption through the figures presented on pages 11 and 12 by yourself before your lecture, so as to accustom yourself to Windows built-in BitLocker system. Then during the class, you can demonstrate it to your pupils.

**EXTENDED TEACHING****Net Extra**

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**SUPPORT MATERIAL**

Visit the following online links for more learning and teaching information about this lesson:

**ANSWERS TO COMPREHENSION ASSESSMENT****1. What is encryption? Describe some of its advantages.**

A. Encryption is the transformation of data into a secret code. The primary purpose of encryption is to protect the confidentiality of digital data stored on computer systems or transmitted via the internet or computer networks.

Some of its advantages are:

- Encryption plays a vital role in assuring security of IT systems and communications.
- It provides the key elements of security which are:
  - a. The origin of a message can be authenticated
  - b. The integrity of a message is intact; its contents can be counted on for staying unchanged since it was sent
  - c. The sender of a message cannot (repudiate)/deny that it's been sent by them

**2. How does Encrypting File System help us secure our data?**

The Windows operating system has a built-in encryption system/feature/utility for data security, the Encrypting File System (EFS). This feature allows you to store information, files and folders on your hard disk in an encrypted format. With EFS activated, you have control over who can access the files.

The steps to initiate this system are:

- a. Right-click the icon of the folder or file you wish to encrypt and select properties
- b. Under the General tab, locate attributes in the last section and click Advanced. A new screen will emerge.
- c. Check the last option Encrypt contents to secure data, and click OK.
- d. Go back to file properties (where you started) and click Apply. Windows will confirm you whether you need to encrypt the selected file or its entire folder.
- e. Make your choice and click OK. Your file or folder should be encrypted and could only be accessed by an authorized log in user.

**3. Discuss different types of encryption.**

There are two main types of encryption:

- Symmetric-key ciphers:

This method uses the same key or cipher for encrypting and decrypting a message or a file. Symmetric-key encryption is much faster than asymmetric encryption but the sender must exchange the key used to encrypt the data with the recipient before he or she can decrypt it.

- Asymmetric cryptography

This method is also known as public-key cryptography, it used two different but mathematically linked keys; one public and one private. The public key can be shared with everyone, whereas the private key must be kept secret.

**4. How can you encrypt data on the internet?**

Whenever you are on an unsecured Wi-Fi network (at an airport for instance), it is easy for an outsider to intercept the data traveling to and from your computing device. Your data in such a case can be encrypted using encryption services like The Onion Router (TOR) or Virtual Private Networks (VPNs).

These services route all your internet traffic/data via proxy internet servers in an encrypted and undecipherable format.

A virtual private network creates a secure “tunnel” to a trusted third-party server. Data transmitted through this tunnel (either to or from your computer) is encrypted, so it’s safe even if intercepted. You can find web-based VPNs that charge a small monthly fee but provide very easy access, or you can set up your personal or business VPN.

### 5. Can a hacker break into an encrypted file? Why or why not?

Encryption has multiple mathematical equations to hide information from outsiders by converting documents, messages and files into indecipherable data.

Normally, there is a key to decode or crack encrypted files and there can be instances where hackers may bypass this scheme and break into privileged information. Such attempts can be countered with good encryption practices.

How a hacker could break your wall

If a hacker succeeds in planting a key-logger on your system, he can record your activities, including the generation or use of cryptographic keys. In addition, some forms of malware enable the controller to browse the contents of your hard drive and this makes cryptographic keys and passwords stored by you in plain text vulnerable.

Algorithmic procedure to fend off cracking

A cryptographic method called hashing is used by servers to stop hackers from accessing passwords. This is a one-way algorithm that relies on separate strings for each input.

When you create an account and password, the server stores the hashed version of your password for the moment and when you log in and it hash your input and compares it to the stored value, letting you in if the system knows you entered the correct password.

### Insecure and secure passwords

Common words will always be hashed easily by a hacker and matched in the database. The algorithms for these would be the easiest to follow. By using words which don’t appear easily or do not appear at all in the dictionary make for difficult passwords to crack. Sites can add “salts,” or randomly chosen numeric values, to the cryptographic hash function to alter its output.

### Weak Encryption

Sometimes the level of cryptographic security may be insufficient to repel a brute force attack. A brute force attack requires trying every possible key to break an encryption scheme, and it can take very long to succeed. To facilitate this kind of attack, hackers can take over other computers, devoting their energy to crack an encryption scheme. Using a longer encryption key can greatly increase the amount of time it will take to break the encryption. Many forms of consumer encryption use 128- or 256-bit keys, but the United States Computer Emergency Response team suggested in 2012 that a move to 2,048-bit keys would be necessary to protect data through the next two decades, due to increases in computing power.

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## LESSON 3: KEYBOARDING: KEY TO COMPUTER PROFICIENCY

### LESSON OBJECTIVES

1. To familiarize the learner with the advantages of touch-typing
2. Understanding the suitable equipment required for getting used to touch-typing
3. Teaching the utilization of the three different rows on the keyboard to be able to touch- type efficiently
4. Teaching the way to use capital letters through shift keys while touch-typing



**LESSON STARTERS**

Your students can have a superior way of presenting their school assignments and projects.

This lesson not only talks about typing on a keyboard but typing on the keyboard in the most beneficial manner.

Ask your students if anyone of them has ever typed anything on a computer before. If anyone has, ask them what happens when they do it. Does it require them to keep looking at the keys?

Of course this degrades the writing speed.

There is good news for them as this lesson tells of a specific manner of typing to adapt oneself to which develops much better computer habits in a person.

**TEACHING STRATEGY**

This is a demo-based lesson. Before you begin to help your students with typing, teach them the benefits of touch typing. You can ask them whether they would want to chat with their friends online in a fast, error-free manner.

Clarify to them the benefits of touch typing as mentioned in text. For instance, touch-typing greatly aids a writer or typist in transferring thoughts to text with much less interruptions.

Our mind has the tendency to race ahead of the movement of the typing hand. If someone types by any other method than touch-typing they are bound to keep looking at the keys and so lose their train of thought. Touch-typing means a person will type by being blind to the keys, thus keeping the typing speed up with the thinking speed.

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**ANSWERS TO COMPREHENSION ASSESSMENT****1. Why is touch-typing so effective and beneficial?**

Touch typing can bring great ease to one's typing activities whether one types for personal work over the internet or for professional reasons. Let's take a look at its advantages:

It saves hours of workload for you as compared to the two-finger typing style.

You can focus on your work rather than on finding the keys to your letters.

If you write professionally it helps your ideas flow naturally and you forget much less while you type.

It boosts your work by helping you become more productive.

It encourages you to use the computer on a higher level of convenience.

It tires you a lot less while working long stretches on the computer.

Your friends will appreciate this skill of yours and they will try to acquire the same skill.

**2. What is the most important rule of touch-typing?**

The first and foremost thing in order to be able to touch-type most accurately is getting the proper gear and setting the proper posture. The rule of thumb for this style of typing is that you must never leave your home keys. Your right index finger should always be on the letter J and your left index finger should always be on the letter F. Refer to the figure on page 15 and make it a point to work the colored fingers for keys of the corresponding colors without exchanging the designated positions for keys.



**3. What are home keys in the top row? Why are they named so?**

The row on a typewriter or computer keyboard that contains the keys to which four fingers of each hand return as a base, is called Home Row. The home row keys are A, S, D, and F for the left hand and J, K, L, and the semicolon (;) for the right hand.

**4. Why are there two shift keys on the keyboard?**

There are two shift keys on the keyboard because the typist has two hands. The left shift key is to be used with the left hand and likewise the right.

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**LESSON 4: OPEN SOURCE SOFTWARE****LESSON OBJECTIVES**

1. Familiarizing the learner with a brief historical overview of open source software
2. Understanding the difference between open source and closed source software (also called proprietary software)
3. To uncover the advantages of open source software
4. To understand drawbacks of open and closed source software

**LESSON STARTERS**

At this point you are to carry your students into the world of computer software.

Make sure the extent to which your pupils understand the relationship between software and computer.

Let them know that software is what makes a computer tick. Without software computers are almost useless. If the computer is the body then software makes the organs inside that body, each designed to perform specific functions.

Then you should make clear the relationship of software and programmer. Programmers are computer experts who design and write software to make the computer act in a certain way.

There is a language in which programmers write software which is unlike the language we speak.

It is the language of codes which a computer can understand or interpret. Each function a computer performs is due to processing a particular set of code written for the machine to do that task.

**TEACHING STRATEGY**

This lesson isn't demo-based. It gives the learner a theoretical background of the propagation of open-source software. Take a look at excerpts from Eric Raymond's The Cathedral and the Bazaar.

The learner should be able to realize that open source software is a kind of movement in the internet and broader telecom community behind which lies an idea of cooperation in the field of software development in general.

Code of software being available for modification by any programmer worldwide brings ahead a platform for shared work by computer programmers.

This gives computer scientists a chance to study problems in the techniques and the science of software programming.

You would be able to engage students further if you bring along pictures of what computer written codes look like to show round. The learner must see that human language is transformed to a form of mathematical language for the machine to comprehend and respond to the task we want it to perform.

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**SUPPORT MATERIAL**

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**ANSWERS TO COMPREHENSION ASSESSMENT****1. Why is open source software user-friendly?**

Such software is user-friendly because:

- a. It is an excellent learning tool for people who want to become programmers
- b. It is modifiable
- c. They are extremely economical (free of cost in most cases) compared to proprietary software
- d. They allow real time development and bug fixes
- e. It is more objectively focused as it can be developed in accordance with purely technical requirements

**2. How does open source software work?**

Open source software is free for anyone to access without any price on it. Its source code is available for modification or enhancement by anyone. This way any programmer can make changes to features of any of its applications and to the application's behavior.

Software developers may change the code of the open source software in order to improve upon the program by adding features previously lacking therein or by fixing certain parts of it that are faulty.

**3. Explain what gives open source software its flexibility.**

Open source software is generally flexibly modifiable. This is because modular systems allow programmers to build custom interfaces or add new abilities to it. It is innovative since open source programs are the product of collaboration among a large number of programmers.

Businesses and individual users can customize the structure of open source software and applications to suit their needs, for instance the Word Content Management system (CMS) allows web developers to use and edit many of the blogging software plug-ins to transform their websites as per their clients' needs. And you can use it yourself to make a free website using the wordpress extension.

**4. What are the disadvantages of open source software?**

The disadvantages of this software are as follows:

- Lack of user support
- Bugs are not always fixed
- Not user-friendly every time

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**LESSON 5: INTRODUCTION TO PROGRAMMING****LESSON OBJECTIVES**

1. Letting the learner know the main phases in the process of making a program
2. Familiarizing students with the types of programming languages
3. Familiarizing the student with the kinds of programming software

**LESSON STARTERS**

Now your students know the role of software. It is time to take them into the area of program creation. Here the students will get to know about how programming languages are distributed into types according to the area of function they deal with.

Students will also learn the major kinds of programs designed through programming languages. Computer programming (often shortened to programming) is a process that leads from an original formulation of a computing problem to executable computer programs.

Here “formulation” means the form or order in which the actual computing problem is stated. Computing problem means the breaking of a particular computer related task into components (mathematical equations), so that when we perform any function on a computer on the front end, the computing problem corresponding to that task is solved by the machine at the back end, therefore giving us what we want through an application.

**TEACHING STRATEGY**

The nature of this lesson again is such that it does not require a lot of demonstration at this stage. Yet, some concepts about how programming works need to be made clear for the learner who has just started into the subject of programming. A programmer’s job is to instruct the computer to do things. The following terms, in this specific context, would do well to be jotted on the whiteboard for the class to focus on:

Process

A series of actions or steps taken to achieve a desirable end.

Procedure

A series of actions conducted in a certain order.

Algorithm

An ordered set of steps to solve a problem.

Writing software or computer programs involves describing processes, procedures and it involves the authoring of algorithms.

When you are a programmer you develop lists of instructions which comprise the source code representation of software. The stuff that these instructions manipulate are different types of objects e.g. numbers, words, images, sounds etc.

Writing computer programs is a lot like writing down the procedure of doing something.

Creating a program can be like composing music or like designing a house. It has been argued that in its current state it is an art, not always engineering.

Food for Thought

Computers don’t lie. They can’t. You always get what you say to a computer through a computer program. It has often been said that a person does not really understand something until he teaches it to someone else. Actually a person does not really understand something until after teaching it to a computer i.e. express it as an algorithm.

Therefore, programming helps a person learn the importance of clarity of expression.

An important reason to consider learning about how to program a computer is that the concepts underlying this will be valuable to you, regardless of whether or not you go on to make a career out of it.



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**ANSWERS TO COMPREHENSION ASSESSMENT****1. Why are multiple programming languages used**

To become an expert programmer it is necessary to learn multiple programming language because no single language can tackle every task, so it's important to be knowledgeable in many. Technology is in a constant state of change. The more languages a programmer learns, the easier it becomes to pick up new techniques and smartly handle his or her tasks.

**2. What are the different types of low-level languages? Explain the difference between them.**

There are two popular types of low-level languages:

- Machine language
- Assembly language

**Machine language:**

Machine language is a low-level code that is interpreted and converted from a high-level source code. It is understood only by the machine.

**Assembly Language:**

It is a group of languages having the same structures and commands as machine language, but it allows a programmer to use variables instead of numbers.

**3. What is the difference between low-level and high-level language?****Low-level Language**

It may be referred to as a computer's native language. Their prime function is to operate, manage and manipulate computing hardware and components. Applications written in this language can be directly executed on a computing hardware without any interpretation or translation.

**High-level Language**

This is for use by a human operator or a programmer. It is referred to as being "closer to humans". All instructions involved in writing an application or program with this language are in commands and mathematical operations taken from the language humans can understand.

**4. What is FORTRAN?**

FORTRAN (Formula Translating System) was one of the first high-level languages to replace assembly language.

**5. What is the purpose of Assemblers, Compilers and Interpreters and what is the difference between these three?**

The purpose for each is listed one by one below:

**Assemblers**

These are computer programs which translate programs written in assembly language into machine code. Then that code is readable and executable by the processor on the motherboard. These are sometimes known as compilers of assembly language. They may also act as interpreter.

**Compilers**

These are computer programs meant to transform high-level source code written by a human programmer into machine language so as to get the processor to understand it. This transformation from high-level to machine language is called compilation. The compiler translates the entire program before it is executed.

**Interpreters**

These are high-level programming language translators. They are able to translate the code during execution statement at a time. They convert one program statement into machine language, execute it, and then proceed to the next program statement. All this with the program being interpreted remaining in the source language that the programmer wrote it in.

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**LESSON 6: LEARNING THE BASICS OF PROGRAMMING****LESSON OBJECTIVES**

1. To teach how structural flow is maintained in writing a program
2. Learning how to develop a flowchart
3. Understanding BASIC (Beginners All-purpose Symbolic Instruction Code) programming language
4. Familiarizing the learner with how to control data to control the flow of a program
5. Looking at the concept of “reserved words” within a programming language while writing a program
6. Listing the most important keywords

**LESSON STARTERS**

What your class is going to learn in this lesson is one of the most important facets of the computer world.

This lesson helps the learner with questions like

- Just what do instructions a computer understands, look like?
- What kinds of objects do the instructions manipulate?

The students will learn what things to keep in mind while writing a program at the very basic level.

The lesson serves as the very first taste of understanding how commands or statements are written in a way that the computer may grasp them.

Programming is a practice that can develop in the student, a new kind of insight into the processing nature of a computer.

**TEACHING STRATEGY**

This is one of the most important lessons from this book.

You are once again dealing with a demo-based lesson.

An important segment of this lesson is developing a flowchart as the importance of thinking systematically must be stressed before the students.

One way of explaining flowchart procedure can be observed by the following points:

1. Define the process to be diagrammed. Write its title at the top of the work surface.
2. Discuss and decide on the boundaries of your process: Where or when does the process start? Where or when does it end? Discuss and decide on the level of detail to be included in the diagram.



3. Brainstorm the activities that take place. Write each on a card or sticky note. Sequence is not important at this point, although thinking in sequence may help one remember all the steps.
4. Arrange the activities in a proper sequence.
5. When all activities are included and one is sure the sequence is correct, draw arrows to show the flow of the process.
6. Review the flowchart with others involved in the process to see if they agree that the process has been presented accurately.

Don't rush with any of the topics included in the lesson. Your students need to get a good hang of the features in the syntax of GW(*Gee-Whiz*) BASIC. Only then would they be prepared to understand any other programming language in the future.

Pay special attention to the segment Control Your Data on page 33.

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## ANSWERS TO COMPREHENSION ASSESSMENT

### 1. Why does your program need a structure to run?

Computer is a machine that give, the output according to your instructions. To deliver the accurate result it needs a structure that a programmer gives through a programming language. You write the syntax of a program in a programming language..

### 2. What are the functions of a flowchart?

A flowchart is a picture of the separate steps of a process moving in a sequential order.

The times a flowchart is needed can be:

- To develop understanding of how a process occurs.
- To study a process for its improvement.
- To communicate to others how a process is carried out.

When better communication is needed between people involved with the same process.

- To document a process.
- When planning a project.

### 3. What symbols do we use with decimal, numeric and string variables?

The symbols used with the above are:

- For decimal: ! is for single-precision, whereas, # is for double-precision digits.
- For numeric/integer: % is used
- For string: \$ is used

### 4. Define constants and variables.

#### Constants:

The value of a constant always remains same. If you want some value to remain same throughout your program you will use a constant for it.

**Variables:**

A variable is another way of storing information by a programming language. Variables are names whose assigned values can change with the passage of time during program execution.

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**LESSON 7: URDU ON COMPUTER****LESSON OBJECTIVES**

Understanding the need to have Urdu language functionality on computers for people of the subcontinent, especially Pakistanis

1. Having the learner know what issues are there with entering Urdu in computer
2. Finding the extent to which Unicode helped Urdu font compatibility, with various software and operating systems
3. To see the difference between the popularity of an Urdu word processing program and an Urdu Windows
4. Understanding the basic workings of InPage software
5. Learning how to set up Microsoft Word for Urdu
6. Getting to know how one may google in Urdu with a phonetic keyboard

**LESSON STARTERS**

This is a lesson about ways in which the computer can be used in Urdu.

Although having a computer that works entirely in Urdu is a far cry from what the situation is, working to have one is a game really worth the candle.

It is necessary for people of a country to have the opportunity to access technology in their own language. Although English has been with us for a considerable time and is part of our historic period through England's rule, it has not completely tied in with the ethos of Pakistanis.

Therefore it is very important that instead of being intimidated by English from a computer, they must be drawn to it through a language that is part of their personal lives.

With this lesson you can help students appreciate the degree to which Urdu is supported on a computer system and also get them to see the limitations which, for the time being, spoil the experience of using a PC in Urdu.

**TEACHING STRATEGY**

This is a lesson, requiring demonstration. You would do well to show the program InPage to your students. This is important for them to understand the segments given on pages 39, 40 and 41.

Let the learner take time in getting used to the essential features and tools of InPage.

Up till now, your class has taken lessons in learning how to type in English but here they have the chance of learning Urdu typing with a software that can process Urdu words.

You may give small exercises of typing out Urdu sentences to your class. This would help them get used to the process. Let them see what a phonetic keyboard looks like.

If you install Urdu as an input language of Windows on a computer in the lab, your students would see how MS Word can work with Urdu (for segments on pages 41 and 42).

Show the learner how they may surf the web in Urdu through Google with the segment "Searching in Urdu" on page 44.

**EXTENDED TEACHING****Net Extra**

As it has been mentioned that the Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information.

Log on to net extra account at  
www.learningwell.pk

**SUPPORT MATERIAL**

Visit the following online links for more learning and teaching information about this lesson:

**ANSWERS TO COMPREHENSION ASSESSMENT****1. Why is Urdu now a part of languages being used in the computer world?**

Fifty-five percent of all the content available on the internet is in English. But more than seventy percent of Pakistan's population isn't versed in it. Although much useful information is only a click away for internet users, those people cannot avail this rich resource. What they need is an internet that speaks to them in a language they understand and can easily relate to, instead of shying away from operating computers and learning to surf the web just because all of it is in English. Since Urdu happens to be the most widely understood language in this country, there is an utmost need for the internet and software to be available in Urdu.

**2. What is the problem with there being an Urdu version of Windows?**

Although the Urdu script of "Nastaleeq" has been added up in Unicode, which is a universal text encoding system for computers, Windows in Urdu has not been popular with buyers/customers. The problem centers on the fact that there is almost no software released in Urdu anywhere. This means having an OS on your computer in Urdu with all the rest of the programs in English. Another main reason for the very low popularity of Windows in Urdu is that it uses the Arabic or the "Nuskh" font by default to write matter in Urdu. Pakistanis seem to have a strong dislike for this font and so very few people want to use it. Thirdly, Microsoft uses a standard Urdu keyboard which is not preferred by a majority as they want Nastaleeq fonts and a phonetic keyboard layout.

**3. What are the advantages and disadvantages of InPage?**

A. The advantages of InPage are as under:

It greatly helps in Urdu newspaper publication, both electronic and physical  
The Urdu composing tool in it cannot be found in any other software  
One does not need to install additional packages to run InPage  
It has the nastaleeq font with a phonetic keyboard  
It supports diacritical marks for Urdu, like in Persian and Arabic  
But we

bbb

**4. Why is the phonetic keyboard layout so popular in Pakistan?**



The reason why the Urdu phonetic keyboard layout is so popular with people in Pakistan is that it has an arrangement of writing Urdu with corresponding sounds in the roman script.

The Windows keyboard has a different kind of arrangement for the Urdu alphabet for instance the key A in it displays the letter 'meem' and the key B is for the letter 'sheen'. This sort of correlation is not user-friendly and Pakistanis have a hard time adjusting to it. Key A for 'aliff', key B for 'bay', keys C and K for 'kaaf', key S for 'seen', key H for 'hay' and so on is definitely much easier to comprehend.

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## LESSON 8: GOING PRO WITH POWERPOINT

### LESSON OBJECTIVES

1. Learning how to start with simple presentations on PowerPoint
2. Exploring some of the most commonly used features of the program
3. Learning how to work with multiple animations on a single object
4. Understanding the slide-show procedure

### LESSON STARTERS

This is an important lesson from this book, in the sense that it is about something with practical value for almost every profession.

PowerPoint is one of the most needed software programs anywhere you go. Being skilled in it should be taken as compulsory.

You may begin by saying what your pupils will learn here is going to help them in preparing countless assignments or presentations efficiently and presentably at the university level and beyond.

Besides, beginning to learn how to operate PowerPoint means you are giving yourself the chance to be able to communicate with an audience in a systematic and qualified manner.

The relevance of this program is such that any kind of office work in this era is hardly done without it.

Let your students know that excel in any kind of professional environment in the future they would need to know how to work with PowerPoint.

### TEACHING STRATEGY

This is a demo-based chapter and the right way to teach it would be to take the students into the computer lab. Let the students open PowerPoint on the computer by themselves and get accustomed to its interface.

Take them through each segment of the lesson piecemeal and do not rush.

As you complete each segment let them take a while to absorb the instruction given. Assign them practice-tasks as you get done with each segment.

Ask your students to install PowerPoint in their home computers.

### EXTENDED TEACHING

#### Net Extra

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Log on to net extra account at

[www.learningwell.pk](http://www.learningwell.pk)

**SUPPORT MATERIAL**

Visit the following online links for more learning and teaching information about this lesson:

**ANSWERS TO COMPREHENSION ASSESSMENT****1. What is the purpose of using PowerPoint?**

The purpose that PowerPoint serves is making a presentation look more accessible and in keeping with precise and quick information display. The presentation may be made by a student in class, by an employee of a company in the office, by a teacher giving a lecture or anyone else. It saves the effort of having to say each aspect of one's intercourse verbally and brings a visual dimension for the listener. Bringing an added advantage to communication skills, PowerPoint can be one's tool to put across a point in a clearer, quick-to-grasp and more savvy fashion. PowerPoint is practical for today's corporate official environments, for schools and universities to aid learning, in hospitals for staff meetings or any place where people may use a computer to put information across. The information could be of any kind.

**2. How does PowerPoint give your presentation a professional look?**

PowerPoint especially caters to a professional environment of any sort. Some of the interesting things with the information you want to present are:

- Adding animation to your text slides
- You can efficiently line up objects and space them equally
- There's not just an option of adding any single animation, you can apply multiple effects to any single object
- You can choose audio effects to add to your information
- The slide show feature allows one to easily roll up or down chunks of information
- There's a feature of checking spell errors and glitches in grammar
- You can choose from a variety of templates and themes to give your presentation the tinge and hue that pleases you along with helping you prepare your project in no time

**3. What are the main features of PowerPoint?**

The main features of PowerPoint are as under:

- Basic slide templates such as schedules and diagrams
- Ready-made themes with professional images
- Font groups and preselected color schemes
- Similar to other MS Office software, PowerPoint has its own library of shapes and objects, and users can create custom charts and graphs to share data with an audience
- Users can also apply different backgrounds to slides and insert their own diagrams and pictures
- The program includes basic grammar and spell-checking tools
- To stay current with changing technology, Microsoft has launched version 2013 of the program which has been optimized for viewing on tablets, phones, widescreen monitors and projection screens

**4. How can we apply multiple animation effects to one object?**

To the above, the following steps need to be followed:

- i. Go to Animation tab
- ii. Select the object to add another animation to
- iii. Click Animation Pane

- iv. Click Add Animation and select an animation effect
- v. To add more animations repeat the above steps, click Add Animation and pick another animation effect
- vi. Each slide had/has a sequence of animation/s. You can change the sequence by dragging the animation into the Animation Pane panel as shown in the top-left figure on page 49.

### 5. What are templates?

A PowerPoint template is a pattern or blueprint of a slide or group of slides that you save as a .potx file. Templates can contain layouts, theme colors, theme fonts, theme effects, background styles, and even content. You can create your own custom templates and store them, reuse them, and share them with others. Additionally, you can find many different types of free templates built-in to PowerPoint, and hundreds on Office.com and on other partner Web sites that you can apply to your presentation.

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## LESSON 9: UNDERSTANDING ACCESS

### LESSON OBJECTIVES

1. To teach why databases are required
2. To know why information can be organized efficiently with databases
3. To learn how relational databases work
4. To appreciate the value of MS Access as a trustworthy starting point in creating and managing databases
5. To understand the difference between MS Access and MS Excel
6. Learning the basic steps of creating a database with MS Access
7. To find out how the four main objects of MS Access are created
8. Learning how to toggle or shift between the four view-modes in Access

### LESSON STARTERS

The students have learnt to work with Excel previously. Now it is time for them to upgrade to another kind of data management software with better functionality and more diversity.

This program also holds importance for grooming one's professional skills. Ask the class whether they think storing data is an important task in our lives, if so why.

Talk to them about how important can accessing that data at the right time in the right way be.

Why do we store data? What does data mean to us? Questions like these can serve as good starters for the learner toward this lesson.

You may also ask your class whether they found learning Excel interesting. If they did, they are going to find this even more so. If not, this program might help them develop an interest in Excel.

### TEACHING STRATEGY

What a database is, will be the foremost thing you need to clarify for your students.

Databases are information warehouses needed to meet a practical end of any sort.

Not only are databases used to store information, but also to analyze and process it so we know how the information is useful and what it tells us to do.

Access is designed to work well with other Microsoft Office programs. You can use Access with these programs to perform very powerful operations with your data. For example, you can use information in your MS Access tables with documents you have created in MS Word.

It's important you let the students get used to how Access looks like.

The features of Excel and Access can be compared in the computer lab which would greatly aid the learner in building a clear understanding of the nature of database software.

### EXTENDED TEACHING

#### Net Extra

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### SUPPORT MATERIAL

Visit the following online links for more learning and teaching information about this lesson:

<http://www.lynda.com/Access-training-tutorials/140-0.html>

<http://www.learnaccessnow.com/>

### ANSWERS TO COMPREHENSION ASSESSMENT

#### 1. Why is the primary key always unique?

One of the critical steps in database programming is the inclusion of a primary key in a database table. This ensures that each record in the table is distinct from other records, which eliminates the possibility of duplicate data. A primary key is composed of one or several column fields. Once a primary key is added to a table, it should remain constant and should not deviate from its purpose, which is to identify a database record.

#### 2. What is a database management system?

A database management system (DBMS) is a collection of programs that enables you to store, modify and extract information from a database. There are many different types of DBMSs, ranging from small systems that run on personal computers to huge systems that run on mainframes. The following are examples of database applications:

- computerized library information systems
- automated teller machines
- flight reservation systems
- computerized parts inventory systems

#### 3. What is the difference between flat database and relational database?

Flat Database

This is a comparatively simple database in which the entire database is contained within a single table.

Relational Database

Here information is stored in multiple tables, rather than just one. There is a link between all the tables comprising the relational database.

#### 4. What are the similarities between Microsoft Access and Excel?

The similar functions that both Access and Excel can perform can be seen thus:

Storing Information

Microsoft Excel spreadsheets and Access tables both provide a format to store information in a single set or in multiple sets. In Excel, multiple sets of data can be placed in separate tabs of the same Excel file. Similarly, you can separate data into multiple Access tables in an Access database. Excel

spreadsheets and Access tables have the same recognizable features, including cells organized in columns and rows, column headings, and row selections.

#### Sorting and Filtering

Excel spreadsheets and Access tables allow you to customize the way your information is listed. You can sort alphabetically or numerically by one or more columns. For example, you can sort a product listing by product ID number, then by name and then by distributor in both programs. Also, you can view a limited amount of information by filtering your table or spreadsheet. This doesn't remove any records, but it temporarily displays records based on a criteria.

#### Setting Data Type

You can set specific data types for cells and columns in both Excel spreadsheets and Access tables. Setting the type of data improves the readability of your data set, as the user can distinguish different types of information. The default data type in both programs is text, which doesn't impose any particular formatting. But you may want a column listed "Cost" to contain currency-based numbers. If you set the data type to currency, the appropriate format is displayed.

#### Text and Cell Formatting

Your Excel spreadsheets and Access tables will benefit from custom text and cell formatting. In both programs, you can set text formatting, cell height and column width. You can also set the text alignment to the left, center or right. Grid lines can help distinguish cells from each other and can be set to be displayed vertically, horizontally or both. Customizing these formats improves the usability of spreadsheets and tables and provides a professional appearance to your spreadsheet.

### 5. How is Microsoft Access better than Excel?

The following points make clear what makes Access a better database management tool compared to Excel:

- We can use Access for relational databases whereas Excel only works with flat data.
- Even if flat data is what we have at hand, the searching, sorting, filtering, data entry and data management are easier in Access compared to Excel.
- Excel can contain small amounts of data in each cell. Access can store larger amounts in each cell with the overall capacity of a single database running up to 2 GB.
- In Excel we directly enter data in cells which is a bit difficult. Whereas in Access there are tools to make forms for entering data which makes the entry process convenient.
- By using Access we may also create reports of the stored data.
- Access provides tools so that multiple users can update data simultaneously. This functionality to edit data from multiple locations is not present in Excel.

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## LESSON 10: WORKING WITH ACCESS

### LESSON OBJECTIVES

1. Learning to create a new database
2. Learning to create a table according to the following features:
  - Understanding reasons for using Data Types
  - Editing and making tables in Design View
  - Manually filling in the tables
  - Deleting a table
  - Creating 'relationships' and learning the types of relationships in a database

- Getting to know the Access relationship editor
  - Editing relationships window
3. Learning to create a form
  4. Learning about reports
  5. Understanding how to use queries

### LESSON STARTERS

Microsoft Office Access is a software application that enables you to create databases to store various kinds of information. It is a user friendly package, which enables you to use its features regardless of your level of database expertise.

Access provides you access to a large range of pre-designed database templates. By choosing a pre-existing template suitable for the data you need to store, you can save the time required to design a database from the very start and quickly begin to fill the database with your information. If necessary, you can customize an existing template to your exact requirements or use the features of Access to create a new database design, with information fields, data forms and reports.

### TEACHING STRATEGY

A good way to teach the learner how to start using Access is by carrying out a small project of creating a straightforward Contacts list.

Emphasize in front of class that what they learn about Access is going to benefit them across the all field of (computers) Information Technology. They may not want to pursue a career in computer sciences when they are older yet their skill with Access is going to be of special help in other professions as well.

This is because there is no area of work or business that doesn't involve storing and processing data.

Many targets are achieved on the basis of analyzing properly stored and accessible data alone.

Access includes a rich set of features which allows you to customize your database's functionality to suit the way you want to work. Let the students take time in familiarizing themselves with the features given in the lesson.

Letting your students properly understand how this program works will also enhance their perceptiveness of Excel.

### EXTENDED TEACHING

#### Net Extra

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### SUPPORT MATERIAL

Visit the following online links for more learning and teaching information about this lesson:

### ANSWERS TO COMPREHENSION ASSESSMENT

#### 1. What are the core functions of Access?

There are four core functions of Access:

- a. Create table
- b. Create form
- c. Create report
- d. Create queries

## 2. What options are a must when a new database is created?

Access comes with a variety of templates that you can use as a starting point. A template is a ready-to-use database that contains all the tables, queries, forms and reports needed to perform a specific task. If one of the templates fits your needs, using it is usually the fastest way to get a database started. So, to create a new database in this manner follow the steps listed below:

1. If you have a database open, on the File tab, click Close Database. Backstage view displays the New tab.
2. Several sets of templates are available in the New tab, some of which are built into Access. You can download additional templates from Office.com.
3. Select the template that you want to use. The template icon appears in the pane on the right, just above the File Name box.
4. Access suggests a file name for your database in the File Name box — you can change the file name, if you want. To save the database in a different folder from the one displayed below the file name box, click, browse to the folder in which you want to save it, and then click OK.
5. Click Create.

Access creates a database from the template that you chose, and then opens the database. For many templates, a form is displayed in which you can begin entering data. If your template contains sample data, you can delete each record by clicking the record selector (the shaded box or bar just to the left of the record), and then doing the following:

On the Home tab, in the Records group, click Delete.

6. To begin entering data, click in the first empty cell on the form and begin typing. Use the Navigation Pane to browse for other forms or reports that you might want to use.

## 3. How a form is created in Access and why is it useful?

A form is like a display case in stores that makes it easier to view or get the items you want. Since forms are objects through which you or other users can add, edit or display the data stored in your Access database, the design of your form is an important aspect. If your database is going to be used by multiple users, a well-designed form is essential for efficiency and data input accuracy. It is very easy to create by

- Clicking the Table you want to create a form for
- Clicking Form and your form is in front of you

## 4. What do you understand by 'reports in Access'?

Reports offer a way to view, format and summarize the information in your Microsoft Access database. For example, you can create a simple report of phone numbers for all your contacts or a summary report on the total sales across different regions and spans.

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## LESSON 11: UNDERSTANDING HTML

### LESSON OBJECTIVES

1. Understanding the meaning of Hyper Text and Markup
2. To know how markup languages are written
3. Having the learner to write their first ever HTML code and view it in a browser
4. Understanding the structure of a web page
5. Getting to know how HTML elements are written
6. Getting familiar with “nesting”
7. Understanding the attributes of an elements
8. Using View Source to see the hidden HTML coding of web pages



**LESSON STARTERS**

Now you can let your class know that they are at the brink of yet another topic which greatly decides how well we understand computers.

Previously the learner came across lessons about programming and the creating software that pointed to various computer languages. This lesson too is about a language but not for building apps and programs, but for displaying the contents on any web page or for creating web pages.

HTML is the most important web programming language to be familiar with and it stands for Hyper Text Markup Language.

To be able to tweak a site for any purpose it is critical that you have some basic coding skills.

Gaining some coding knowledge is beneficial for

- creating cleaner or neater pages
- repairing broken pages
- including links within pages
- adding vibrant effects to your pages and reading other websites

Why Html? Very simply, Html is the foundation language for building web pages.

**TEACHING STRATEGY**

It's a practical-oriented lesson.

Show students various web pages through multimedia projector, ask what they think about how the web pages they have seen are created.

Lesson requires practical exercise of writing with the help of elements of HTML markup.

Practice with groups of students in computer lab.

Assign the learner to write in HTML various sentences having headings and text under those headings.

Pay special attention to the segments on pages 69 and 70.

Go on View Source excursions:

Take your students surfing on the web and show them the hidden side of their favorite webpages.

Help them see the components of the structure that the web page is visible as.

**EXTENDED TEACHING****Net Extra**

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**ANSWERS TO COMPREHENSION ASSESSMENT****1. How do we write the basic structures of a web page?**

HTML defines the structure and layout of a web document. Every web page is actually an HTML file.

Each HTML file is just a plain-text file but with an .html file extension instead of .txt, and each file contains all the instructions necessary to display that page plus the content of the web page. Websites contain many HTML files that are linked with each other.

**2. What is the purpose of using HTML and what can we do with it?**

It will always benefit a computer science student to learn basic web coding languages. The most fundamental Web programming language to be familiar with is HTML or Hyper Text Markup Language. The most compelling reason to learn HTML is the need to edit or tweak web pages.



Whether you are using a program or online editor to create your website or you have purchased an existing website, you will likely need to edit one or more web pages.

Besides that, you can understand the structure of the World Wide Web through this language and be able to create web pages of your own choice.

### 3. Why is it necessary to put a closing tag to an HTML element?

Be careful not to forget the end tag while writing the elements of an HTML document. Many HTML elements will not display correctly. However some will work, even without ending tags.

For example

Example in TRB(image)

The example above with the wrong usage of the p-tags works in all browsers, because the closing tag is considered optional, in this case.

But we can't rely on this because it might produce unexpected results and even errors if ignore putting the end or closing tag

### 4. What is the purpose of !DOCTYPE?

The purpose of! DOCTYPE is to let the browser detect the version of HTML markup being used by a web page.

### 5. How can we declare more than one attribute to elements?

(please refer to the figure on the bottom right of page 70 and then the figure on the top of page 71)

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## LESSON 12: WORKING WITH HTML

### LESSON OBJECTIVES

1. Understanding the most commonly used elements of HTML
2. Writing simple codes all equipped with the required tags, breaks and other components to gain the basic aptitude for this language
3. Gaining confidence in using HTML to create personal web pages

### LESSON STARTERS

This is an extension of the previous lesson and takes the student further with HTML. This part of the book will help your pupils become familiar with the most commonly appearing elements in the language.

Be sure that the learner fully understands the concept of “nesting” in order to grasp how full sentences are written and because all HTML documents contain nested elements.

Clarify the difference between paired and unpaired elements. Explain empty elements as well. This will help the student see how tags are used in HTML elements to construct sentences for a web page.

### TEACHING STRATEGY

The approach for this lesson is almost the same as that of the previous one .Stick to the figures given in the lesson throughout your lecture, and take the student piecemeal through each step. Encourage the learner as much as you can to keep up the practice of writing HTML code.

**EXTENDED TEACHING****Net Extra**

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**ANSWERS TO COMPREHENSION ASSESSMENT****1. What are the different types of tags and why they are used for?**

Tags are instructions that are embedded directly into the text of a HTML document. Each HTML tag describes that the browser should perform a certain task instead of simply displaying the text. In HTML, most of the tags begin with an opening tag (< >) and end with a closing tag(</ >)

Some of the tags are as under:

- Headings tags <h1> to <h6>, is used to display main and subheadings.
- Paragraph tag <p>, is used to declare paragraph.
- Break tag <br>, is used to declare line breaks within
- Italic tag <i>, is used to display text in italic
- Bold tag <b>, is used to display text in bold.
- Underline tag <u>, is used for underlined text.
- Emphasis tag <em>, is used for showing emphasis by italicizing the font
- Strong Importance tag <strong>, is used to show strong importance by making the text bold.

This tag can be used interchangeably with the <b> tag

**2. What  is the relation of <li> elements to <ul> and <ol> tags?**

On several occasions we need to declare a list of items in the text of a web page. There are two common types of lists:

**a- Numbered List**

The <ol> tag is used to declare that a certain list is going to be a numbered list, “ol” here standing for “ordered list”.

But, inside an <ol> element there are a number of items. Each of these items must be enclosed within separate tags. This is where the <li> element comes in so that each item can be seen listed on the web page.

**b- Bullet List OR Unordered List**

The <ul> tag is used to declare that an element is going to be part of an unordered list.

Once again, <li> tags declare that the items listed are part of a bullet or unordered list.

Each item being enclosed within separate tags will again properly nest <li> elements in the <ul> tag.

**3. Why do we have six different types of tags for heading?**

There are six types of tags for a heading so as to enable us to differentiate between gradually decreasing levels of headings under the topmost heading, according to display size.

**4. What is the difference between parent and sub-folder?**

A parent folder contains the main contents to be displayed on a web page whereas the sub-folder is used to house content related to the primary content on a web page. This makes up the link structure of the pages in a website. Relative links are used to locate files present in parent or sub-folders.

**LESSON 13: POPULAR MICRO-BLOGGING APPLICATION: TWITTER****LESSON OBJECTIVES**

1. To get a hold of the jargon used by “Twitteratis”(the active group of users of the site Twitter with large amounts of followers and daily involvement)
  2. Familiarizing the learner with the Twitter homepage
  3. Learning how to create an account on Twitter
  4. To understand the process of “following” and “followers” on this platform
5. Catching up with some other commonly used Twitter features

**LESSON STARTERS**

Interaction and communication have always been essential aspects of human society. Twitter adds a whole new dimension to just that.

A person who uses twitter said, “This is why I love Twitter. I can come on here at any time to talk about any of my interests and have people who relate to what I'm saying.”

And someone else who does the same, said, “Gotta love Twitter: I tweeted photo of bus with smashed windshield, @KING5Seattle retweeted it, then the driver tweeted us to say he was OK.”

What is Twitter?

Twitter is an online social networking service that enables users to send and read short 140-character messages called "tweets". Registered users can read and post tweets, but unregistered users can only read them.

These days it's one of the most fashionable ways to interact with people and propagate views over the worldwide web.

**TEACHING STRATEGY**

If you have a twitter account yourself then nothing would serve the purpose of your strategy more. Just take you students on twitter through your account and let them see what kind of a world it is. Proceed segment by segment of the lesson and keep showing the learner on the screen what each segment is all about. If you don't have an account yet, it is advisable you sign up before your lecture. It's as easy, probably easier, as signing up for an email account.

**EXTENDED TEACHING****Net Extra**

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**SUPPORT MATERIAL**

Visit the following online links for more learning and teaching information about this lesson:

<https://about.twitter.com/>

<https://about.twitter.com/what-is-twitter>

<http://netforbeginners.about.com/od/internet101/f/What-Exactly-Is-Twitter.htm>

**ANSWERS TO COMPREHENSION ASSESSMENT****1. Why Twitter is also considered a micro-blog?**

Micro-blogging is a way to share information with the world but in a more snippet type of data unit. While blogging is mostly long posts which require thinking about and editing, micro-blogging is writing short snippets of thoughts, recommendations and such.

As of now Twitter is one the most popular services for micro-blogging.

**2. What makes Twitter different from the regular blogs and websites?**

Twitter is different than other social media sites. While regular social networks like Facebook and Google+ help you engage with most familiar people in your life, Twitter allows people to keep in touch with like-minded people across its entire network. You do not become friends with someone, you follow them instead. Following someone is not necessarily an admission to friendship, nonetheless it affords interaction and conversation. Therefore, people who share with you become not your friends on Twitter but your followers.

**3. How can you get more followers on Twitter?**

Please refer to the following webpage for the answer to the above:

<http://www.wikihow.com/Get-More-Followers-on-Twitter>

**4. What are the terms used in Twitter and what do they mean?**

Here are some of the most important words making up Twitter jargon:

- a- Tweet: a twitter message is called a tweet
- b- Retweet (RT): re-sharing or giving credit to someone else's tweet
- c- Feed: the stream of tweets you see on your homepage. It comprises updates from users you follow
- d- Handle: your username
- e- Mention (@): a way to reference another user by his username in a tweet (e.g. @mashable). Users are notified when @ is mentioned. It's a way to conduct discussions with other users in a public realm
- f- Direct Message (DM): a private, 140-character message between two people. You can decide whether to accept a DM from any twitter user, or only from users you are following. You may only DM a user who follows you.
- g- Hashtag (#): a way to denote a topic of conversation or participate in a larger linked discussion. A hashtag is a discovery tool that allows others to find tweets based on your topics of interest. You can also click on a hashtag to see all the tweets that mention/appear/update in real time, even from people you don't know

**5. What are mentions and direct messages?**

A great way to interact with Twitter is to get the hang of the "@mention". Just use the @ symbol before that person's handle and that person will be able to see a notification of your message on his/their profile.

Clicking Expand or View Conversation on a tweet will display all the responses that message received, including tweets from people you are not following. You can see when someone follows or @mentions you in the @Connect tab at the top of the page.

Another way to communicate through twitter is by direct messaging (DM). The messages are private, between you and the receiver, but keep in mind what you say could still be made public. So make sure whatever you send is something you would feel comfortable having posted openly.

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**LESSON 14: E-Medicine: A Boon for the Far-offs****LESSON OBJECTIVES**

1. Imparting a basic idea of e-medicine to the learner
2. To take a look at how e-medicine works
3. To learn a little about latest monitoring and diagnostic instruments
4. To have a peek at smart textiles having remarkable utility for medical personnel
5. To have a peek at wearable gadgets that can acquire vital medical data
6. To have a glimpse into changing implications for patient-to-doctor communication

**LESSON STARTERS**

You may begin by asking your class who among them wants to follow into the medical profession? It's not hard to find quite a few school-goers with the bent toward wanting to be doctors. Let them know that this lesson should be of special interest to them as it talks about new methods of diagnosis and cure they would find themselves having to deal with as doctors in the future. This lesson really doesn't require too much of a warm-up session and you can plunge straight into its subject.

**TEACHING STRATEGY**

Not a very specific strategy is required to carry out your lecture for this lesson. You can follow the sequence given in the segments and discuss them as one of the pupils reads them aloud one by one. One thing would be great if you can manage it: a multimedia projector for couple of videos pertaining to e-medicine taken from the internet. It would greatly enhance the learning experience of your class.

**EXTENDED TEACHING****Net Extra**

As it has been mentioned that the Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information.

Log on to net extra account at  
[www.learningwell.pk](http://www.learningwell.pk)

**SUPPORT MATERIAL**

Visit the following online links for more learning and teaching information about this lesson:

**ANSWERS TO COMPREHENSION ASSESSMENT****1. Do you think e-medicine is an effective way of treatment? Why?**

E-medicine looks encouraging for the treatment of ailments effectively when we think about the following:

E-medicine implies conducting important medical procedures like checkup, diagnostics, prescription, treatment, therapies and surgery via help of computer-based instruments and in various cases, the internet.

E-medicine is meant to assist the healthcare sector, doctors and patients by using computerized tools, applications, software, internet and other related technologies.

It enables physicians and specialists at one place to deliver e-health, patient diagnosis, intra-operative help, therapy and consultations to medical personnel and patients at a far off site.

**2. What are the things which cannot be done without e-medicine?**

Probably the single most important thing that cannot be done without the aid of e-medicine is long-distance exchange of useful medical information in real time to under developed and run-down localities. Real time is the catch here. It is not always viable, financially to provide expensive medical equipment to far-flung areas. As Such equipment needs a high patient-turnover to meet the costs and this doesn't happen in distant areas where infrastructure lacks.

**3. What is the purpose of Electronic Medical Records?**

These are one of the most critical tools in e-medicine. EMRs help in maintaining prompt and accurate updates of patient details and history. This helps doctors and care-givers to work flexibly and economically. FreeMD, OpenEMR and CottageMed are examples of free, open source software to keep EMRs in medical institutions.

**4. How can e-medicine help doctors treat patients in Tharparkar?**

Just like there is a distant learning system for students who can't attend university classes as regulars, we may call e-medicine a distant treatment-facility for patients living in impoverished areas affected by calamities. Tharparkar has long been a neglected and decrepit region especially in terms of medical care. Doctors from other developed parts of the country have a chance to transmit prescriptions and dietary advice via internet communication mediums like Skype.

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**LESSON 15: THE COMING REVOLUTION: INTERNET OF THINGS****LESSON OBJECTIVES**

1. To come to grips with the idea of an internet of things
2. To take a look at some latest wired gadgets and items of mundane use
3. To understand what sort of technologies are need for IoT
4. To have a glimpse of the disadvantages that the IoT can bring
5. To take a brief look at why risk management is essential in the future

**LESSON STARTERS**

This lesson can have a really interesting pre-lecture session between you and your class. It involves the future possibilities of the internet. How far can the internet actually go in transforming the living experience? How will a futuristic internet affect the way people use their brains to understand their personal needs and the means people use to respond to those needs?

Take a look at the mention of the fridge on page 88 that knows how fresh the food inside it is. Up till the present day, man has been able to devise a machine which knows the answer to almost every problem related to human knowledge; the computer. The computer has various programs in the form of software to detect what happens inside its hardware and software. It informs us about those happenings via software.

What if fridges had software that would enable them to tell us how much longer the food in it is going to last, or which food item belongs to which compartment?

Up till now we have had an internet of information, tons and tons of information on each and every subject of human inquiry.

What if the coming days bring an internet of things, instead of information?

**TEACHING STRATEGY**

The strategy for this lesson should revolve around notions about the possibilities of technology. Much of what was written as science fiction in the closing years of the nineteenth and the early years of the twentieth century has become a reality. The human imagination seemingly has no bounds. It is constantly striving to adapt cutting-edge technology to the smallest aspect of human life, for better or for worse.

Talk of this sort included in your lecture would draw the students' attention to the stuff this lesson comprises.

Try and find an interesting article from the web on IoT and share it with your class.

An article on the concept of cloud computing would also aid students catch on to new research subjects/topic/issues/questions, experts of today are involved in to make the internet act in novel ways. You can get a print-out of the following webpage for your students:

<http://www.theguardian.com/media-network/2015/mar/31/eight-questions-internet-of-things>

**EXTENDED TEACHING****Net Extra**

As it has been mentioned that the Net extra is especially designed for the teachers and the students. Here you can find not only the text material but also the related information, activities and exercises. You can guide your students to use net extra for more information.

Log on to net extra account at  
[www.learningwell.pk](http://www.learningwell.pk)

**SUPPORT MATERIAL**

Visit the following online links for more learning and teaching information about this lesson:

**ANSWERS TO COMPREHENSION ASSESSMENT****1. What is the concept of an IoT? Describe some of its advantages.**

The Internet of Things (IoT) is the network of physical objects or "things" embedded with electronics, software, sensors and connectivity to enable it to achieve greater value and service by exchanging data with the manufacturer, operator or other connected devices. Each thing is uniquely identifiable through its embedded hardware but is able to interoperate within the existing Internet infrastructure.

Some of the advantages of such an internet are:

Internet-connected flower pot

Internet-connected teapot

Internet-connected lights, speakers and projectors

Internet-connected smart bed for children

Internet-connected medicine bottle

In the above, the term "internet-connected" can be replaced by "wired" to mean the same thing.

**2. What is the importance of RFID (Radio Frequency Identification) technology to the internet of things?**

Many of the ordinary household machines (especially those with mechanical parts only) we use daily never have an electronic circuit inside them which makes it impossible for them to connect to the internet. Moreover, the IoT doesn't have a synchronized structure for wireless communication. This is where the importance of RIFD technology comes in as it is meant for tiny data transmission and identification.

RFID is a chip that sends data related to an object or a person wirelessly to be able to track or identify that object or person. This helps make objects uniquely identifiable so they may easily and accurately be connected to an ever expanding internet.

### **3. What is cloud computing? How does it help in the evolution of the internet of things?**

Cloud computing is a model of computer utility where services stored on the internet are provided to users on a temporary basis. It makes sharing computing resources, software and information possible. Here's a look at how cloud computing can act flexible and analytic enough to support the IoT as it grows: What could the actual size of the IoT ecosystem be?

The IoT ecosystem includes any form of technology that can connect to the internet. This means connected cars, wearables, TVs, smartphones, fitness equipment, robots, ATMs, vending machines, and all of the vertical applications, security and professional services, analytics and platforms that come with them.

The IoT is predicted to have 4 billion people using 31 billion devices by 2020, nearly doubling the amount of connected technology we see now.

The goal of the IoT is to make these applications, services, and devices as ubiquitous as possible, all while enabling the gathering of vast quantities of data about user and consumer preferences.

As the IoT expands, so will cloud computing in the following ways

#### **Startups**

Given the amount of innovation evolving out of the IoT, you can expect to see many more startups offering new devices and services, which is great for cloud vendors.

Startups often embrace the cloud because of its "no upfront payment necessary" model.

(Software as a service) SaaS-enabled enterprise level applications allow smaller businesses to use sophisticated software for project and customer relationship management.

#### **Developing countries**

Much of the cloud growth we see is actually the result of developing countries that have been slow to adopt the cloud. In fact, 90 percent of the revenue generated from the IoT has come from developing countries.

Although this percentage is expected to wane once these countries have finished playing "catchup", developing countries are still a great market for cloud growth.

#### **Analytics and advertising**

Data analytics will become even more accurate in predicting consumer preference and behavior.

### **4. What could be the problems you might face in a world where everything is connected via the internet?**

As the IoT spreads, a lot more devices with little computers inside them will come into homes and offices, connected to each other via the internet. That will make them tempting targets for cyber-attackers.

Some medical devices, including several types of insulin pump have also been hacked during public demos. The problem is that these devices do not have enough processing power to handle antivirus and other defense mechanisms found on a conventional PC. These devices are being produced in bulk, so hackers finding a flaw in one will be able to target the entire batch.