



# My Book Of Computer

8

***Teacher's  
Resource Book***

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**LESSON 1: VIRTUAL WORLD: PERILS TO PRIVACY****LEARNING OBJECTIVES**

1. To understand how internet works, behind the scenes
2. To familiarize the learner with metadata
3. To understand the use of metadata
4. To familiarize the students with the spy activities on the internet
5. To build an idea about better practices in online privacy

**LESSON STARTERS**

This lesson deals with some stark realities. It brings to attention an aspect of online life that most of us, for whom the internet is a mundane reality, don't really give a thought to. Ask your students, if they ever read a spy story. Have they ever heard about characters like 'James Bond(from James Bond film series)', 'Ethan Hunt(from Mission Impossible film series)', 'Jason Bourne(from The Bourne film series)' and 'Ali Imran(from Imran urdu digest series )'? Let them know of the famous maxim: "Truth is stranger than fiction". The way global politics has moved during the last two decades, covert surveillance of the public over the internet can be taken as one of the major concerns by anyone as common as the any student sitting in your class.

Anyone who thinks that by being in a private environment and connected to the internet, no one knows what they are doing is mistaken. This is exactly what this lesson talks about. Through it, the learner comes to know about a secret war being waged within the internet. A war that has an important connection to their privacy. The learner learns about the forms in which data about a user exists on the internet even when they are logged off.

**TEACHING STRATEGY**

This lesson deals with concepts concerning data management. This data management is the kind that people unknown to the computer user perform.

Each segment of the lesson is laid out plainly. You may ask one of the students to read aloud while you explain side by side. Pay special attention in helping your learner to properly understand the nature of metadata.

It would benefit you to do some online reading on how to practice effective internet privacy before your lecture.

**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. How is the modern internet structure threatening our online data?**

The worldwide web is structured in such a way that every page, website, network and every service on it retains traces of our data for endless periods of time. It is in the nature of modern computing that users everywhere are constantly rendering a lot more information on the internet than should ever be



needed. For example, through today's smart phones, a person's physical location can be acquired on the go. The IP address of a particular internet connection can be detected by the email client and information about a particular web browser can be accessed.

Whenever a user uploads, downloads, socializes online, they leave information behind. This information can, and is, in many cases, scrutinized, stolen, traded and even destroyed without the user's permission. This gives us an idea of how our online data can come under threat anytime.

## **2. What problems can we encounter because of the good and the bad guys and why?**

On the web, there is a hidden struggle between the good and the bad guys. The bad guys are constantly up to new schemes meant to steal and manipulate data that doesn't belong to them. The good guys keep policing and monitoring data traffic so they may crackdown on such elements. This tug-of-war situation can adversely affect the ways in which we are accustomed to using the internet. Ordinary users are subjected to unnecessary regulation, surveillance and monitoring because of this control that the good guys want to have over the bad ones. Therefore, most of what we do on the internet has tabs on it. This means a great part of our internet privacy i.e. the right to do legal online activities without interference is compromised.

## **3. Is metadata dangerous? If so, how?**

Metadata is the data that is generated the moment a user connects to the internet. It tells your ISP about your connection status, connection time and connection location. Metadata is not what is typed on a device or said over the phone, rather it is the trail that is left behind.

Since metadata includes important traces of a user's online activity, it can be used by a third unknown party against the user. It can be used to find out things about the user which they might consider an offence if exposed. This is how metadata has important implications for online privacy.

## **4. Why is it impossible to get rid of intelligence and spies?**

The reason we can't get rid of intelligence agencies spying on our material is the hidden political tactics being used by governments to keep an eye on people they believe are a threat to them. Spy agencies like NSA (National Security Agency, USA) and GCHQ (Government Communications Headquarters, UK) are using ordinary internet communications done by internet users because it is more revealing than metadata. They have dedicated equipment and teams to fetch user data from multiple sources including analytics. They have pervaded computing machines with faulty encryption and have partnered with big data companies like Google and Microsoft to physically install data fetching equipment on the big wires of the internet. Governments claim that they do this to keep an eye on the terrorists and troublemakers and that they need to keep an eye on large numbers of people for this purpose. Therefore, it is not within reach of the ordinary internet user to be completely free from espionage.

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## **LESSON 2: THE LEADING TRENDS IN PERSONAL COMPUTING**

### **LEARNING OBJECTIVES**

1. Understanding cloud computing
2. Familiarizing the learner with Chrome Book and Chrome OS
3. Explaining further aspects of cloud computing
4. Understanding the evolution of cross platform OS
5. Familiarizing the learner with the projected keyboard

**LESSON STARTERS**

This lesson is going to help your class understand new directions, computing is taking.

It involves learning about a technique called cloud computing, which promises new ways of accessing data from different computing systems.

People who, up till now, have been using separate devices like desktop systems, laptops, palmtops, tablets and smart-phones will have a new kind of linkage between them. This lesson talks about a latest operating system which will bring users divided by devices a lot closer.

Besides, the learner will have a look at how the process of feeding data into a computer will take sharp new turns in the near future.

**TEACHING STRATEGY**

It is important for your class to understand the concept of cloud computing:

The practice of using a network of remote servers hosted on the internet to store, manage, and process data, rather than a local server or a personal computer, is referred to as cloud computing.

This lesson talks about how smart-phones are on their way to becoming the new ultra-mobile computers. If you have a smart-phone, take it with you to the class and show it to the students. This concept revolves around the convenience of creating any kind of web based document or program from any location.

Ask how many students would consider it more convenient being able to work as effectively on a smart-phone as people normally do on bigger desktop computers.

Talk to your class about ways that are currently used to store data on computers. Talk about whether the ways we use to store data now are too wieldy.

You may also try and find some interesting videos on the internet concerning latest developments in computer input devices. These can be shown to the students during the class to help augment their interest in the subject at hand.

**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. How is cloud computing the need of personal and commercial computing?**

A dominant evolutionary trend in personal computing is cloud computing. It refers to remote storage of data and remote computing in servers located far from the computer on which a task is being done.

There are a great deal of technical and commercial benefits for companies as well as individuals, through this technology.

Cloud computing bring the following benefits to consumers:

- Smaller, cheaper computers because:
- They need low-power processors
- They need small storage space

- They don't need an operating system upgrade
- They don't need to update applications
- They don't need to arrange backups for data
- They don't need to carry data around with them as it can be accessed from anywhere in the world
- Computer getting stolen doesn't mean loss of data
- The lightest machine can do the heaviest work because processing is done by servers in the cloud

## 2. Do you think using a smart-phone brings one to any limitation?

One of the most defining moments for communication development in recent times has been the emergence of the smart-phone. The smart-phone, although used as a phone most often, is also built as a device meant to achieve computing tasks. In fact, their computing power outdoes that of supercomputers that were used thirty or forty years ago.

They can be used by a programmer to design new software and do other application development activity, but it gets beat for the size of its screen and keyboard. The fact that it's not convenient to do programming and web development work on it doesn't alter its capability to be used for the like. But, there are certain computing tasks which aren't hindered by the smallness of its size. For such purposes, the popularity of the smart-phone as a hand-held computer is constantly on the up.

## 3. Write some disadvantages of internet TV.

Here are some disadvantages of this kind of television service:

- The first disadvantage of Internet TV has to be the initial cost involved. You are not simply done with purchasing the TV; you also need the necessary accessories to connect it to the Internet. This may involve purchasing Ethernet wiring; power-line adaptors or wireless receivers.
- Then there is the fact that not all channels and shows have made their way to the Internet just yet. This means you will still need to keep your cable or satellite subscription to watch everything you wish to see. While movie services are available 24/7, they do often have comparatively long waiting times.
- Some shows are not available for a full week or more after they were shown on TV, making it highly likely that somebody, somewhere will spoil your enjoyment by telling you 'what happened'.
- What's more, to prevent people watching shows entirely via Internet TV, many TV companies do not show every episode of every show online. In other words, if you want to watch what you want, when you want, you will need to pay for subscriptions to your cable service, Internet movie packages, perhaps TV station's Internet services, and so on.

## 4. What do understand by the cross-devices OS?

This is a kind of a new generation operating system that experts in the field of web development are currently working on. It is directly concerned with how successful cloud computing becomes in the coming days.

The "cross-devices" here means the mode of covering various devices or gadgets to provide a work-connection between them. Or, we may say it is an alliance or linkage spreading across different gadgets provided through the platform of a unique OS. Such an OS allows that you connect to the internet from any device anywhere and be able to access your stored data in the same manner.

## 5. How will it be easier to enter data in the future?

It will be easier to feed data into computer systems because there are going to be handier modes of input available to the user. It won't be necessary anymore to be in a specific place in a specific manner to be able to store data on hard drives.

Two such handy modes of input can be seen by the following systems:

- Voice recognition system: such a system can recognize spoken words. A user may dictate to the computer and the speech will keep getting stored on it.
- Hand gesture controller: this is a small camera-based sensor that can be connected to the computer. A page may be scrolled by the movement of a hand, fingers may be turned to control volume and air may be pinched to make pictures smaller or bigger. The space between the user and computer becomes an interactive three-dimensional environment.
- Projected keyboard: this keyboard would help a great deal in beating the inconvenience presented by smart-phones during computing tasks. They will be like one of the images projected by R2-D2 in Star Wars. A full-sized virtual keyboard will be presented on any flat or opaque surface.

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### LESSON 3: LEARNING QBASIC (I)

#### LEARNING OBJECTIVES

1. To Bring the students to understand the nature of QBASIC
2. Have the learner print their very first sentence in QBasic
3. Show the student how to apply different features and tools of this programming language to write their first program
4. Take the learner on their first trip of using a programming language

#### LESSON STARTERS

Your students have probably been on computers to play games, and to write reports for school. A programming language is the tool to tell the computer what function you want it to perform, a lot like giving someone directions to one's house. The computer follows each step and does exactly what you tell it. By programming the computer you can solve math problems, create art or music, and even make new games. It's all up to the user. Now it's time for your pupil to start typing in a small program to learn how things are done in QBasic.

The exercise given in the lesson will also give the learner the chance to later change the program created so the pc does what they want it to do  
Before long, they can be writing their own codes!

#### TEACHING STRATEGY

The strategy requires you to facilitate the students in gaining a meaningful grip on creating programs, from the perspective of a beginner.

QBasic is a language that is really helpful for the novice to make sense of the process of writing a computer program.

There are quite a few IT professionals who wouldn't regard learning it as a purposeful task. But it is the one language almost all computer programmers have used to initiate themselves into the writing of computer code.

Demonstrate each step shown in the lesson on a computer screen. The tutorial Hello World program is quite elementary and straightforward.

Be sure the correct function of each QBasic command mentioned in the lesson is clear to the learner. It will get clearer as you help them get through exercises of writing uncomplicated programs like the one under Active Learning at the end of the lesson.

**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 the purpose of learning QBasic? Where would it be helpful to us?**

QBasic serves its purpose well for those who are curious to create their own programs or learn the fundamentals of programming, to perform mathematical calculations, to solve problems through computing, to create some kind of art or even make their own games. Ways in which it can be helpful to us can be seen as under:

- Full facility for structured modular programming
- Math functions and facilities for math based problem solving
- Vector graphics (lines, circles, objects etc controlled by equations)
- Pixel level graphics (graphics based on allocating colors to pixels)
- Sequential and Non-Sequential filing of data
- Sound and Music generation
- Common basis for other specialist computer languages

**2. What are the three main tabs in QBasic? How do they function?**

The three main tabs in QBasic are:

- Run tab: enables us to execute programs
- Help tab: enable us to use keywords on our own
- Search tab: enables us to find words in code so we may edit or copy them or want their reference in some way

**3. Which loop is the most basic loop? What is it used for?**

The most basic loop in QBasic is Do Loop. It is used to make the program enter an infinite loop and doesn't let the option "press any key to continue" appear on the screen. Placing the keywords Do and Loop at the starting and ending points of a loop lets the program repeat itself endlessly, until the user terminates it.

**4. How can the flow of your data be controlled?**

There is a powerful tool in QBasic to control the flow of data. "IF THEN ELSE" helps us make important decisions concerning the flow of data. When the program we have created comes across the keyword IF then it expects a condition. Based on that condition the program decides which code to execute.

If [Condition] Then

[run this code if condition is true] Else [run this code if condition is false]

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**LESSON 4: LEARNING QBASIC (II)****LEARNING OBJECTIVES**

1. Teach the use of IF THEN ELSE statement
2. Teach where to apply SELECT CASE
3. Explain DO WHILE loops
4. Show how OR is used
5. Explain the FOR NEXT loop
6. Show how STEP and FOR NEXT are used
7. Explain RND and RANDOMIZE TIMER
8. Familiarize the student with data types in QBasic
9. Show sub routines and functions in QBasic

**LESSON STARTERS**

With this lesson you will lead the pupil further into the method of working with QBasic. First developed in 1964, QBasic was an aid to teach programming. It came out as a subset of Fortran which wasn't suitable to teach the basics of the programming as it was meant for professionals. BASIC contributed to the introduction and acceptance of personal computers and is part of their history principally because the first real use of a PC was to run BASIC in order to be able to write programs to make it useful.

Vendors provided BASIC as a utility installed with the operating system in order to sell the computer and did so right up till 1996, but by then commercial software was widely available and the character/nature of typical computer users had changed to be more consumer-orientated with little interest or need to be able to program their computer.

With the increasing complexity and size of professional software and the disinterest of companies to either produce new software or continue to distribute older software that is suitable for teaching programming principles to school and college students, it defaults to educators to preserve and disseminate teaching languages.

**TEACHING STRATEGY**

Today, QBasic is still the most widely used programming language for beginners.

Take a look at the advantages of this language:

- Comes with an Integrated Development Environment (IDE)
- User-friendly interface. Mouse support
- Operates like MS word processor with full editing facilities
- Tells you before you run the program, if you have made a syntax error
- If program stops due to a run-time error, the cursor highlights the error
- Facility to step through the program code and observe screen output
- Help files provided are easy to use and serve as a reference
- Help files offer sample programs which can be copy/pasted and run

This lesson has some important tools of the QBasic language and requires you to carry out the lecture at a rate which helps the learner build a thorough understanding.

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### SUPPORT MATERIAL

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### ANSWERS TO COMPREHENSION ASSESSMENT

#### 1. What do you understand by “more than one condition” regarding ELSE IF statement?

“More than one condition” here means that we are in need of making several decisions in one go. That is why we use ELSE IF statement.

Take a look how the following example of a written code allows more than one decision without having to type IF THEN ELSE a lot of times:

```
IF [Condition1] THEN[do something if condition 1 is true]
ELSE IF [Condition 2] THEN[do something if condition 2 is true]
ELSE IF [Condition 3] THEN[do something if condition 3 is true]
ELSE[do something if all of the above decisions are false]
END IF
```

#### 2. What is the difference between IF THEN ELSE and SELECT CASE as both are used for more than one condition?

The main difference between the two is that the SELECT CASE statement first selects a variable which can either be numeric or a string. Then the value of this variable (the total) is checked against all CASEs one by one.

This kind of selecting a variable before allowing more than a single decision to be made in a coded statement does not happen in the ELSE IF command used with IF THEN ELSE.

#### 3. How can we prevent our program from freezing?

We can prevent our program from freezing or hanging the computer by using a condition to prevent the non-stop execution of a program. One of way of achieving this is to use the DO WHILE loop.

#### 4. What is the difference between integers and long integers? What impact do they have on your programming?

Integers: 2-byte value in the range -32,768 through 32,767  
Long-integers: 4-byte value in the range -2,147,483,648 through 2,147,483,647

What impact do they have on your programming? This part has not been answered in the TRB.

#### 5. Why do we sometime need to reuse the code?

The key idea behind reusing code is that parts of a computer program written at one time can be or should be used in the development of other programs written at a later time.

There are reusability principles which are followed to do this. This helps save time and resources and to reduce redundancy by taking advantage of assets that have already been deployed in some form within the software product development process.

While code is the most common resource selected for reuse, other assets generated during the software development cycle may offer opportunities for reuse: algorithms, software components, test suites, designs, documentation and so on.

**LESSON 5: UNDERSTANDING DREAMWEAVER****LEARNING OBJECTIVES**

To help familiarize the class with the following features of the Dreamweaver software:

1. The user interface
2. Document toolbar overview
3. Document window
4. Status bar overview
5. Panels group window
6. Properties window
7. Some important terms related to Dreamweaver

**LESSON STARTERS**

Dreamweaver's main functionality focuses on creating HTML & CSS (Cascading Style Sheets) while also managing your files. The graphic user interface (GUI) of this program emphasizes on helping you achieve these three tasks quickly and intuitively.

Web development is a major force that drives the internet world. When we log on to the internet, what we visit are web-pages. The internet is full of countless web-pages with different styles. They are all the product of web development.

You students will not turn into actual web developers by studying this lesson, neither is it the purpose of this lesson to make them so. But it will help them form a beginner's view of what web development means, and will lay out the basics of creating a website for them.

**TEACHING STRATEGY**

What you are familiarizing your students with is an Integrated Development Environment or an IDE. That means, various tools required to effectively achieve web development have been brought together under the single roof of Dreamweaver. It offers a complete environment to allow a person to create a website, to decide how it should look like, what segments it should have, what kind of visual qualities it should portray etc. In short it is an all-in-one package for dressing up a website.

Conduct your lecture in the lab.

This lesson requires step-by-step demonstration of the segments given in it.

Let your students take their time in getting used to the Panel Group window and the Properties window. Pay special attention to demonstrating the Document window to your class as it is the main edit-area they will have to work in.

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**SUPPORT MATERIAL**

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**ANSWERS TO COMPREHENSION ASSESSMENT****1. What are the uses of Dreamweaver?**

Dreamweaver is one of the most popular professional web-design programs available. It offers a lot of power and flexibility for both designers and developers.

It can be used by a professional web developer as well as by a beginner who wants to understand the basics of how web development works.

This program is beneficial for its graphical development tools. The greatest convenience about this program is that you can create web-pages without knowing at all how to write computing code in any of the computer languages. Dreamweaver itself keeps creating the code as you work on your web-document through it. You can use it to write HTML, CSS, JSP, XML, PHP, JavaScript, and more.

**2. Which panel do you think is the most important one and how does it function?**

**(The answer to this question depends upon the student's opinion)**

I think the most important panel in this software is the Insert Panel. It's important because it needs to be used frequently to insert different items on the webpage such as tables, forms, media and images.

**3. How does CSS make our website look attractive?**

CSS plays its part where HTML falls short of providing the user or programmer with formatting choices. CSS styling, when performed by applying an ID or a 'class' to an HTML tag, can enhance a paragraph or some other chosen area on a webpage. A person may be able to make text transparent, apply colour or background image or avail any other format-feature given in CSS. Observe the figure on the top right of page 33, to see the difference between how web content looks when it's done using just HTML and when it's styled with CSS.

**4. What is the importance of hosting and domain names?**

Hosting is the process by which a website that you have designed becomes operational for the internet. There are machines called hosting servers owned by various companies that charge fees from people who want to get their websites available on the World Wide Web. A domain name is the name given to a website like google.com, Wikipedia.org, learningwell.pk where .com, .org and .pk are called extensions. Someone who wishes to have their website hosted, has to first have a domain name for it. This is bought from internet service providers.

**LESSON 6: WORKING WITH DREAMWEAVER****LEARNING OBJECTIVES**

This lesson is meant to help the learner to:

1. Begin a new website project
2. Understand layouts
3. Understand tables in web-page designing
4. Know what cell padding, cell spacing and border are
5. Get familiar with the basic steps to create a website
6. See briefly how templates can be used in Dreamweaver

**LESSON STARTERS**

This lesson is an extension of the last one. It focuses on using some of the features of Dreamweaver to create a school's website.

Your students don't need to know a programming language like Javascript to create a website anymore. This program generates the code automatically.

### TEACHING STRATEGY

It's imperative that the learner shouldn't have any confusion in understanding table layouts.

### EXTENDED TEACHING

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### ANSWERS TO COMPREHENSION ASSESSMENT

#### 1. What is a website layout?

A layout can be defined as the process of arranging graphical or text matter on a page. The design which includes placing various elements in that space and spreading items like titles, page numbers, headings etc is what makes the layout for that page. The same kind of schematic positioning of components to make up a web-page is what stands as the layout of that web-page. A website is composed of web-pages. The outlook /appearance of the website will be decided by the kind of layout that website will carry.

When working in HTML to make a website, there are two kinds of approaches which can be used to form a layout:

- Table layout
- CSS layout

#### 2. How does the option of Alternative Text for images help us?

By entering Alternative Text for an image, we can be provided with information about the image. If the image is unable to load due to any sort of connectivity issue, the alternative text will be displayed.

#### 3. Discuss the tables explained for navigation and footer.

Navigation table

This table allows you to set the properties for the navigation bar on your website's homepage. You will use this table to include all the webpages that your website needs to be distributed into. As you can see from the figure given in the upper half of page 40, the Navigation Table is being utilized to create web-pages of a school's website. Therefore the following items are shown to be added to the navigation table:

"Home | Admission | About | Contact Us".

Footer table

A footer is textual information such as a title, a date or page number placed at the bottom of a page and usually repeated on each page of a document. Therefore, the table footer will allow you to position content at the bottom margin on each of the web-pages of your website. Since the top figure on page 41 shows footer for a school's website, the content there is made up of a copyright statement.

**LESSON 7: VIRTUAL REALITY****LEARNING OBJECTIVES**

1. Explaining the concept of virtual reality (abbreviated as VR) to the class
2. Familiarizing the learner with how virtual reality works
3. Explaining the applications of virtual reality
4. Giving a glimpse into the future of virtual reality

**LESSON STARTERS**

This is going to be one of the most interesting lessons from this book.

You can start with your students by having a conversation about dreams. You may even ask one of the students to relate what she or he dreamed of the night before. Ask them how it would be like if they were able to enter that dream once more, or moreover, enter that dream whenever they wanted to; with eyes open.

You may even engage your class in a chat about some movie that involves the theme of virtual reality, provided most in the class have watched that film.

Talking about latter day video games can also give the learner an idea about what virtual reality is. It is not going to take you long to get your students interested in the subject at hand.

**TEACHING STRATEGY**

There is no specific complication to the strategy for this lesson. It is theoretical and doesn't require demonstration. You can have the learner read the lesson aloud and explain what is said as they go along. An additional thing that you may do (if possible) is screen a clip from a film featuring virtual reality. Or you may find some videos about virtual reality on the internet and show them to your class.

Defining virtual reality:

The computer-generated simulation of a three-dimensional image or environment that can be interacted with in an apparent way by a person using special electronic equipment, such as a helmet with a screen inside or gloves fitted with sensors.

You may also take your students to this website during your lecture (this may be done in the lab):

<https://medium.com/adventures-in-consumer-technology/the-amazing-uses-of-virtual-reality-7ea48dfe0748>

Content on the above website is going to help students understand how virtual reality has the potential to change traditional ways of learning, doing and understanding things.

**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. Which three human senses are essential to experiencing virtual reality and why?**

The three human senses without which it is impossible to have a virtual reality experience are:

- Sense of sight
- Sense of hearing
- Sense of touch

The two senses of smell and taste have been left out. But if a person cannot see, hear and touch in a VRE(VR Environment) then they cannot have the sensation of being present in a simulated surrounding. But, adding smell and taste to experiencing virtual reality would take the experience to the next level.

## 2. What do you understand by tele-presence and how is it important to virtual reality?

Tele-presence is the phenomenon that occurs when a sense of immersion and interactivity are added together.

Immersion is when a person gets immersed in a VRE. They forget their actual surroundings and are totally engaged by the VRE.

Interactivity is when a person can interact with surrounding objects in a VRE. The person is able to associate with the simulated place, is able to touch things, see and hear things just like they would in the real world.

Since the aim of having a successful virtual reality experience is feeling that one is actually in a certain place, the phenomenon of tele-presence is crucial to virtual reality.

## 3. What is the key goal of virtual reality? Explain.

The key goal of virtual reality is to simulate real-life experiences. It aims to imitate a world just like the one around us. Through virtual reality people would be present in a place without actually going to that place. And it's not necessary for that place to exist physically, as it can be possible to create places only found in imaginary stories. Like a place seen in dreams or a place created by an author in a science fiction tale. In essence, virtual reality allows you to pretend that you are present somewhere as you ignore the fact that you may never be able to go there physically.

Dreams are also like virtual reality. They take us to a place that doesn't exist but for the mean time has us believe that it does.

## 4. How does virtual reality give the sensation of being in a different world?

In order for a VRE to successfully give a person the sensation of being in a different world it must properly engage the three senses of touch, sight and hearing. Meaning, virtual reality is a tactile, optical and aural illusion combined into one. When a person can engage with a VRE through these three senses, they encounter a different world altogether.

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## LESSON 8: QUANTUM COMPUTERS: ARE THEY REAL OR NOT?

### LEARNING OBJECTIVES

1. Understanding the difference between (digital electronic) and quantum computers
2. Familiarizing the learner with the concept of quantum parallelism
3. Outlining the advantages of a quantum computer
4. Taking a look at the kinds of quantum computer
5. Learning about hardware of D-wave quantum computers

### LESSON STARTERS

The subject you are dealing with in this lesson is how technological advances are rapidly changing computers. It also deals with advancement in the area of digital data storage. Greater flexibility in the

manner information gets stored by digital computers is the prime concern of current researches behind making quantum computers more feasible than they have ever been.

In 1982, the Nobel prize-winning physicist Richard Feynman thought up the idea of a 'quantum computer', a computer that uses the effects of quantum mechanics to its advantage.

A crucial development was the invention of an algorithm to factor large numbers on a quantum computer. This algorithm helped a quantum computer crack codes much more quickly than any digital computer could. In fact a quantum computer capable of performing that algorithm (known as Shor's algorithm) would be able to break current cryptography techniques in a matter of seconds. With the motivation provided by this algorithm, the topic of quantum computing has gathered momentum and researchers around the world are racing to be the first to create a practical quantum computer.

### TEACHING STRATEGY

The strategy for this lesson needs to involve a shared understanding of a topic of physics and some mathematics. That topic is quantum mechanics. It would prove highly beneficial to you as a facilitator to your class, to do a little read-up on the subject. It is not hard to find several resources and write-ups on this topic on the internet. They are not always written in highly technical language so it's not hard to grasp.

The students would, at this point, need to have a clear comprehension of what the binary system in computers is. This is important for them to clearly compare quantum computers with classical ones. The computers currently in use are classical.

A short way to define a quantum computer can be:

"A computer which makes use of the quantum states of subatomic particles to store information."

Seen from the point-of-view of computer science, this lesson points to one of the most exciting areas in the field of modern scientific studies. If the learner can understand and identify with the topic here, you will have helped provoke their mind to further explore computers from a unique perspective.

### EXTENDED TEACHING

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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. Describe quantum physics in your own words. What is the concept of quantum computers?

Quantum physics steps in where concepts expounded or demonstrated by classical physics fall short of explaining results obtained by certain scientific experiments.

One thing to understand here is that quantum physics has to do with very small sizes of matter.

Concepts of classical physics were sufficient as long as scientists hadn't started to investigate what goes on inside atoms. Therefore this new branch of physics sprang into shape to deal with subatomic particles. The manner in which orbiting electrons behave in an atom, the shapes they form and the positions they are at during their orbiting cycles is the stuff quantum physics takes into account/probes.

From the above it can be guessed what the concept behind quantum computers is. They are computers based upon the principles developed through quantum physics.



## 2. What is quantum parallelism?

This is the most powerful feature of a quantum computer. Such a machine operates on the principle of quantum bits or “cubits”. Unlike a classical computer in which the bit exists in either of two distinct states of 0(for off state) and 1(for on state), the rule changes with a quantum computer where the bits (called cubits) can not only exist in either of the two distinct states but also in both states at the same time. This distinct property is referred to as quantum parallelism. By performing an operation on a cubit, the user performs an operation on two different values.

## 3. What significance do cubits have for quantum computers?

Just like an operation performed on a cubit means the operation performs on two values, a two cubit system would perform the operation on 4 values and a three-cubit system would perform it on eight values. Increasing the quantity of cubits exponentially increases the property of quantum parallelism in a quantum computer. This is the significance of cubits to quantum computers.

## 4. Discuss the hardware of D-wave quantum computers.

Researchers have normally focused on building quantum computers using the traditional logic gate model of computing. But D-wave chose a more specialized approach called ‘Quantum Annealing’. It is a method of tackling optimization problems. Classical computer hardware has relied upon silicon transistors that can switch between ‘on’ and ‘off’ to represent one or zero in digital information.

By comparison D-wave quantum computer rely on metal loops made of Niobium that have tiny electrical currents running through them. A current running counter-clockwise through the loop creates a tiny magnetic field pointing up whereas a clockwise current make a down-pointing magnetic field. One or zero are represented by these two magnetic field states. The Niobium loops become super conductors when chilled at temperatures of -273 °C.

Then the currents and magnetic fields can acquire the quantum state of ‘super position’. Thus, they can represent both, one and zero states simultaneously.

This is how D-wave uses these super conducting ‘cubits’ as building blocks for their computers. There are separate super conducting loops allowing cubits to exchange information called connecting couplers. These connecting couplers, along with their super conducting cubits cannot compute by themselves. Needing a control mechanism to be able to turn on and off, digital-to-analog flux convertors (DACs) fulfill this role. Each of these DACs is about the size of a human red blood corpuscle at 10 micrometers in width. DAC sits directly on the quantum computer chip to act as controlling device. D-wave claims that its current hardware architecture (which has been code named Chimera) should be capable of building quantum computing machines of up to 8000 cubits. The company is also working on a larger processor which would contain 1000 cubits.

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## LESSON 9: LEARNING JAVASCRIPT (I)

### LEARNING OBJECTIVES

By studying this lesson the learner will find out the use of the following features of Javascript(JS):

1. How to write an HTML document with head and body elements
2. Embedding Javascript in HTML
3. Using <script> tag
4. dUsing <head> tag
5. Using <body> tag
6. How to add Javascript to file
7. How to perform simple calculations



8. Learning Javascript statement and the importance of semi-colons
9. Learning about a Javascript program
10. Using Chrome Javascript Console Window
11. How to declare variables
12. Understanding the types of variables

### LESSON STARTERS

Javascript is a standard approach which is very helpful in developing a standard web application. When it comes to the design of modern and standard web-applications with the use of advanced techniques, Javascript is the first choice of developers.

Javascript is gaining popularity because it is simple and easily accessible. It is a technology which serves a better user experience and provides more comfort for web-developers.

The use of Javascript requires the appropriate skill for it to be used in collaboration with HTML and CSS. Javascript provides all the essential tools and techniques required to create an effective webpage. It is with the help of Javascript that elements such as links, images and forms can be manipulated. Its codes can be placed directly into an HTML code.

### TEACHING STRATEGY

Since your students have gone through a QBasic lesson previously in this textbook, they will have a chance to see that the two programs have certain similarities between them.

It is important to help the learner understand the following information to have an effective strategy for this lesson:

Javascript is an object-oriented scripting language designed to be used within a webpage or on a web server. It is a programming language that is used to make webpages interactive by creating special effects within them. It allows developers to create rich and interactive web interfaces and establish asynchronous communication with servers for a constant supply of real time data without page refreshes.

In other words we can say that Javascript is a simple programming language that can be written directly into HTML documents to allow for increased interactivity with the user.

Javascript is a client-side scripting language which can be used to create special effects within the web page, such as link effects, mouse-overs, image roll-overs, navigational systems and much more.

Javascript is not a stand-alone language, rather it is a scripting package for HTML.

It is added to HTML commands by using the <SCRIPT> tag. E.g.:

```
<HTML>
<HEAD>
<TITLE>My JavaScript Page</TITLE>
<SCRIPT> (JavaScript code goes in here)
</SCRIPT>
</HEAD>
```

If a developer wants to place Javascript code within a file on the server, then they have to create a Javascript file on a plain text editor and save it with “.js” extension. Now if there happens to be a need to call Javascript code within HTML code, the developer will have to link the file having .js extension within HTML code. This can be done like this:

```
<SCRIPT language="JavaScript" src="http://www.yoursite.com/yourfile.js">
```

**EXTENDED TEACHING****Net extra**

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www.learningwell.pk

**SUPPORT MATERIAL**

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

**ANSWERS TO COMPREHENSION ASSESSMENT****1. In what respect are QBasic and Javascript similar? How?**

The following similarities are most likely to be noticed on comparing the two programs:

Statements

Keywords

Variables

Functions

Do While loop

If Then Else

Select Case statements

Javascript is considered more of a scripting language rather than a programming language. It is also referred to as an interpreter language at times.

**2. Discuss the kinds of variables in this program?**

Unlike in QBasic where the type of each variable has to be separately declared, Javascript is smart enough to know the type of data you would be storing in a variable.

All types of variable in Javascript are written with 'var' keyword.

The following variables are used mostly in this program:

- String: string (meaning your text) variables are always declared with inverted commas.  
var age = "fifteen"
- Array: sometimes there is a long list of variables (often of the same data type), which is known as an array. If the list of variables is placed inside brackets, Javascript considers it an array.  
var fruits = ["apple", "orange", "banana"]
- Boolean: Boolean means logical value. They are used to make decisions.  
var x = true;  
var y = false;
- Objects: objects are a very important part of Javascript because it is an object-oriented language. Objects will be explained in detail in the next chapter. Right now, let's see how objects are written. Objects are written with curly braces.  
var Car = {color: "Red", manufacturer: "Mercedes-Benz", Model: "2015"};

**3. What are Javascript programs?**

A Javascript program can comprise many statements. Your statements are interpreted in the browser sequentially. The initial statement runs first, then second and so on. The last statement is executed in the end.

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**LESSON 10: LEARNING JAVASCRIPT (II)****LEARNING OBJECTIVES**

By studying this lesson the learner will find out how to use the following features of Javascript:

- a- Understanding case sensitivity of the program
- b- How to type comments in Javascript
- c- Making decisions with If Else statement
- d- Difference between (=) and (==) and (===)
- e- How to take user input using the dialog box
- f- Understanding concatenation
- g- Making decisions with the Switch Case statement
- h- Learning to use While and Do While loops
- i- Understanding functions and creating one's own functions
- j- Understanding the use of HTML events for calling functions
- k- Understanding objects in this object-oriented program

**LESSON STARTERS**

Javascript is a standard approach which is very helpful in developing a standard web application. When it comes to the design of modern and standard web-applications with the use of advanced techniques, Javascript is the first choice of developers.

Javascript is gaining popularity because it is simple and easily accessible. It is a technology which serves a better user experience and provides more comfort for web-developers. The use of Javascript requires the appropriate skill for it to be used in collaboration with HTML and CSS.

Javascript provides all the essential tools and techniques required to create an effective webpage. It is with the help of Javascript that elements such as links, images and forms can be manipulated. Its codes can be placed directly into an HTML code. (Teaching Strategy For this lesson is exactly same as that of Lesson 9)

**TEACHING STRATEGY**

This lesson is an extension of the previous one, you will use it to help the learner further understand how to use Javascript.

Show how the methods explained in each segment of the lesson work on the screen. It requires practical demonstration.

You would help the student's pace by assigning them exercises. The more the learner practices the clearer a picture they have of how each program works.

The emergence of Javascript has provided the necessary tools to create eye catching websites. It has freed designers of all worries concerning issues of accessibility.

With the prevailing trends it is quite difficult to think about web designing without Javascript.

**EXTENDED TEACHING****Net extra**

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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 are the different ways of using comments in Javascript?

Double slash (//) is used to write comments in JavaScript. Anything that goes inside/beside/on the right side of a comment is never executed by a web browser.

```
// This is a comment line
```

```
var x=10; //This comment will be ignored by web browser
```

Comments can be used to quickly omit statements in trial and error phase. It is a very good practice if you do not want to delete the code. But only want to omit a statement for (checking)/testing purposes. See the following example; the second statement is quickly omitted by putting a comment slash in front of it.

```
Var x=10; // This statement will be executed
```

```
// Var x=10; this statement will NOT be executed
```

Another way to add comment is to put the comments between these symbols, /\* and \*/. These symbols are used to have multiline comments.

```
/* These are multiline comments.
```

This is good for documenting your code with large text.

Comments are ignored by browser inside <script> tags\*/

```
var x=10; var y=15; var z=25;
```

```
var person; person= "Harry Potter";
```

#### 2. What is a decision making statement?

A decision making statement is made with the help of a specific keyword. These keywords examine if a certain condition provided is met, and based on that condition the program decides which part of the code to execute and which not to execute. Such statements in QBasic as well as Javascript also help in controlling the flow of data.

#### 3. Why do we use functions in Javascript programming?

Functions are an interesting part of any programming language. Functions are a block of code that is used to perform some kind of specific task. Functions are very important because they help in reusing the code. Functions take input parameters and return values.

#### 4. What is the purpose of using = and + signs in Javascript?

The +(positive) sign in Javascript is used to concatenate two or more variables.

The =(equals to) sign in this program is used to assign values to a variable.

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## LESSON 11: EDITING MOVIES ON THE COMPUTER

### LEARNING OBJECTIVES

1. To make the student know what purposes does video editing serves
2. To familiarize the learner with how Corel Video Studio Pro X 6 looks like
3. To familiarize the student with the video player window



4. To help understand storyboard view and timeline view
5. Teaching the learner how to start a new project
6. Teaching the learner the essential components of video editing
7. To teach the use of video effects
8. Showing the student how audio editing works through this software

### LESSON STARTERS

Do you like going to the movies?

Ask your students if visiting a cinema makes for one of their favorite pastimes.

You may ask your students what kind of movies they like. Is it action films? Is it films depicting fantastical worlds and creatures?

Pick a film likely to be popular among school goes for instance, Hunger Games. Have a little discussion about how the film would have been made. Subtitles seen in the film, the starting credits scene, seeing supernatural creatures move beside human actors are examples of overlaid objects.

Film makers work with video editing software installed on computers to give a film the shape that we watch.

Such software makes it possible to join, breakdown, add effects, add music to the moving pictures which tell us the story in that film.

Without being able to edit moving pictures, it would not have been possible to make films.

### TEACHING STRATEGY

This lesson has your students deal with a topic that is technical in nature. It is also very artistic. Let your students know that just like a painter paints an elaborate scenery mixing colors on the canvas, so does a film maker use film editing software to merge the shots in a film.

Make sure that Corel Video Studio Pro X6 is available in the lab. Open this program in front of the students and demonstrate each segment given in the lesson as you go along.

### 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 overlay object? Explain.

An overlay object is an object whose motion you can trace on the screen using Motion window. This happens when you may wish to move external objects in unison with the movement of a certain object featured in the video.

Procedure:

Right click on an overlay object such as some text and select Customized Motion. This will open a Customized Motion window.

Click on the 'Add Key Frame' button.

Move the key frame with your mouse to set its location

Use the Play and Pause keys to add more key frames to the video until you make a path.

Once you are done, play video to test. You overlay object should move on the path you defined.

## 2. Which function of video editing software you think is most interesting and why?

(The answer to this question rests according to what an individual student thinks. It requires each of your students it have separate replies according to their personal choice.)

## 3. Define timeline and its components.

All video editing software have Timeline editors looking more or less the same. The bottom part of Corel Video Studio contains Timeline view and Storyboard view. These view modes tell the accurate time that each clip will take. It gives you an accurate idea of the position of the photo, subtitles text, audio and other overlay objects in your video clips. It contains the following five components or tracks:

Video track: This contains your videos. Drag and drop files here to add videos to this track.

Overlay track: This can hold photos, videos or text. It is a track that runs above your main video.

Title track: Title and text playing in video are displayed on this track.

Voice track: Drag and drop your audio files on this track to add voice narrations.

Music track: Drag and drop your audio files on this track to add background music.

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## LESSON 12: APPLICATION FOR SOCIAL INTERACTIONS: FACEBOOK

### LEARNING OBJECTIVES

1. To see why Facebook is preferred over other social networks
2. Taking a look at the various utilities of Facebook
3. Getting familiar with Facebook homepage and profile page
4. Understanding the timeline
5. Discussing whether Facebook is safe for users
6. Understanding methods to control privacy on this network
7. Becoming aware of scams, spam and phishing tactics by online attackers

### LESSON STARTERS

Interaction and communication have always been essential aspects of human society. Facebook took that into a whole new dimension. At present it's one of the most fashionable ways to interact with people and propagate views over the worldwide web.

What is Facebook?

Facebook is a popular, free social networking website that allows registered users to create profiles, upload photos and video, send messages and keep in touch with friends, family and colleagues. The site, which is available in 37 different languages, includes public features such as:

- Marketplace allows members to post, read and respond to classified ads.
- Groups allows members who have common interests to find each other and interact.
- Events allows members to publicize an event, invite guests and track potential.
- Pages allows members to create and promote a public page built around a specific topic.
- Presence technology allows members to see which contacts are online and engage in instant messaging.

Within each member's personal profile, there are several key networking components. The most popular is arguably the "Wall", which is essentially a virtual bulletin board. Messages left on a member's Wall can be text, video or photos. Another popular component is the virtual Photo Album. Photos can be uploaded from the desktop or directly from a smartphone camera. Facebook can be thought of as your "digital life" on the Internet. It can even be a way to find long lost friends that you haven't met in years.

### TEACHING STRATEGY

If you have a Facebook account yourself then nothing would serve the purpose of your strategy more. Just take your students on Facebook through your account and let them know 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

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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 benefits can we get from Facebook?

Facebook has many advantages to youth, adults as well as to the businesses. Below are some of them:  
Sharing Of Information

The website allows us to share with others what you desire to share, ask public opinion, ask questions etc. You can share your pictures, videos and what you have been up to with your friends or family. You can control how much information you want to share with whom and similarly other people can easily share their information with you.

#### Chatting

Facebook is a social networking website but you can use it to chat with your friends, too.

#### Mobile Facebook

Whatever you can do on facebook.com you can do from your mobile phone facebook app, on the go. The latest smart phones come with the Facebook app.

#### Business Promotion

Through Facebook Ads and Fans page you can advertise your business.

#### Entertainment

Facebook provides tons of gaming and other applications. Some people open Facebook only to play games. Besides games, there are tons of Facebook apps that you can use and enjoy.

#### Re-connecting with Old or Lost Friends/Colleagues

Many people have found their school days class fellows, and friends on Facebook. With the Facebook's Friend Finder feature, you can search for any person who is registered on Facebook by entering different keywords like email address, city, school or university name, age, etc. In Addition to the Friend Finder



feature, Facebook also constantly shows you at side of your Facebook profile page, a list of people who you may know.

Thus, Facebook is a 'one-stop shop' for entertainment, communication, and exchange of information with others.

## 2. How can we protect ourselves from different threats on Facebook?

To ward off different threats on Facebook, it is important we learn to control our privacy and know how to beat scams, spam, and phishing.

### How we can control privacy?:

Most of the social dangers on Facebook arise due to poor control of your profile data. As such, you must exercise good privacy of your account and allow only appropriate people to view the information that you post. Whenever you post something, you can decide who may be able to see it.

### Scams, Spam and Phishing:

To avoid con artists who target people on Facebook just as they do in email and on many other sites, be careful about the following:

**Beware of phishing attacks:** A phishing attack could be an email message with a link to what looks like the Facebook login page but is actually a deceptive clone of the page that steals your username and password so the phishers and the data thieves can use your account to send spam messages or malicious links to your Facebook friends.

**Beware of malicious programs:** A malicious program like "Koobface" can spread via spam email and Facebook messages that encourage you to click on a link or download malicious software or malware.

**Beware of 'clickjacking' and 'like jacking':** These are links that look like Facebook posts. A clickjacking link redirects you to a site that plants malware on your device.

You need to be an informed "netizen". Don't click on tempting ads, don't use fake apps and don't add strangers.

## 3. What is the difference between Timeline and News Feed?

Facebook Timeline is where you share your photos, posts and experiences on Facebook. On your Timeline you can add a cover photo, edit your personal information, view your Facebook activity log, highlight posts or images, update your Facebook status, share Facebook app activity and add new life events to your profile.

Whereas

A News Feed is a list of updates on your own Facebook home page. The News Feed will show updates about those people who are in your friend's list, as well as random advertisements or posts. The News Feed is actually a collection of events from your friend's own Mini-Feed that is intended to give you a quick look at what your friends have been doing on Facebook.

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## LESSON 13: THE EXPANDING WORLD OF E-COMMERCE

### LEARNING OBJECTIVES

1. Understanding what is meant by e-commerce
2. Tracing the milestones in the developmental stages of e-commerce
3. Taking a look at the major exponents of e-commerce
4. Seeing how an e-commerce site operates
5. Taking a look at the benefits brought by e-commerce
6. Taking a look at the downside of e-commerce



7. Getting familiar with the procedures and tools in conducting e-commerce
8. Understanding the difference between e-commerce and traditional or regular commerce
9. Taking a look at e-commerce in Pakistan
10. Understanding safe practices while carrying out business through e-commerce

### LESSON STARTERS

E-commerce can succinctly be defined as:

Commercial transactions conducted electronically through the Internet.

At its core, e-commerce refers to the purchase and sale of goods or services via electronic channels such as the Internet.

A little history of this mode of conducting business will help your student get in perspective of the subject of this lesson:

E-commerce was first introduced in the 1960s via an electronic data interchange (EDI) on value added networks (VANs). The medium grew with the increased availability of internet access and the advent of popular online sellers in the 1990s and early 2000s.

- Amazon began operating as a book-shipping business in Jeff Bezos' garage in 1995.
- eBay, which enables consumers to trade with one another online, introduced online auctions in 1995 and exploded with the 1997 Beanie Babies frenzy.

Like any digital technology or consumer-based purchasing market, e-commerce has evolved over the years. As mobile devices became more popular, mobile commerce has become its own market.

With the rise of sites like Facebook and Pinterest, social media has become an important (driver of)/contributor to e-commerce.

It is said that in 2014 Facebook was the agent behind 85 per cent of sales on e-commerce platform Shopify.

### TEACHING STRATEGY

The subject of this lesson ties in with the concept of social media networks, which we have studied in the previous lesson.

Again, it is not a demo-based lesson but requires you, as a facilitator to the learner, to bring into focus the conceptual relationship between e-commerce and the current trends in social networking on the internet.

The theme here essentially deals with how the internet has shaped shopping and selling habits of people across cultures and borders.

Helping the learner understand the following will greatly aid you in laying out the subject for the class:

As with traditional commerce, there are four principal categories of e-commerce: B2B, B2C, C2B and C2C.

B2B (Business to Business)– This involves companies doing business with each other.

One example is manufacturers selling to distributors and wholesalers selling to retailers.

B2C (Business to Consumer)– B2C consists of businesses selling to the general public through shopping cart software, without human intervention. This is what most people think of when they hear "e-commerce." An example of this would be Amazon.

C2B (Consumer to Business)– In C2B e-commerce, consumers post a project with a set budget online, and companies bid on the project. The consumer reviews the bids and selects the company. Elance is an example of this.

C2C (Consumer to Consumer)– This takes place within online classified ads, forums or

marketplaces where individuals can buy and sell their goods. Examples of this include Craigslist, eBay and Etsy.

### EXTENDED TEACHING

#### Net extra

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[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. Explain why e-commerce was introduced?

Humans have been trading with each other since time immemorial. Trading has undergone various transformations according to the kind of technologies used in different eras. The essence of those technologies' functions has been the same i.e. exchanging goods and services against monetary payment. With the advent of the digital age, it was only logical that important tools of this day be utilized in the service of commerce. Humans have been able to merge distance and time in terms of communication by putting these technologies to work. Our lives have been transformed by fast communicating, no matter how far our interlocutor is.

One of the most important every day aspects of our lives is commerce. Therefore, such bypassing of distance and time is, especially significant to commercial transactions. This, we can say is the reason why e-commerce was introduced.

E-commerce is buying, selling and distribution of products or services using computers networks. Business functions, such as marketing, ordering, billing and payment processing can now be conducted electronically.

#### 2. Why should we confirm a site's trustworthiness? How can we do this?

Why to confirm:

An e-commerce experience can be spoiled by hackers, data thieves, and intrusive advertising. It is important to beat ways that cyber criminals use to eavesdrop on our internet communications. Online trading requires one to be extra cautious, because you are conducting transactions of a financial nature.

How to confirm?:

- One useful way of doing this is through 'My Web-of-Trust' (MyWOT) browser add-on to determine a site's credibility. On a scale of green to red, WOT shows you whether to trust the site or not. In addition, make sure that the site you are buying from has an SSL (secure sockets layer) encryption installed. To check if a site has SSL, see that its URL starts with 'https://' instead of just 'http://'. An icon of a locked padlock also appears before 'https://'.
- It is important to keep regular update of your security software. You can also use encryption and VPN services to encrypt your (online data while buying or selling online)/online transactions.
- To ensure that no unknown or fraudulent charges have been posted to your accounts, check your statements every week. If you see a charge that looks out of the ordinary, report it to your credit card company or bank immediately.

### 3. What do you think about e-commerce being a student? How can it help people of your age-group?

(This should be left to the student's opinion)

One important way in which e-commerce can help students, is creating mini incomes that will help them through college and provide a basis for future entrepreneurial endeavors.

Take a look at the following things that may be done with the help of e-commerce:

1. Expand upon a hobby, such as photography; My oldest son, Asjad, has a passion for both sports cars and photography. He also has a real talent for photography, and has a portfolio of professional quality photos. He currently goes to niche exotic car dealers, takes photos of their cars, and then shows them the photos in the form of an online portfolio. If they like what they see, they commission him to take photos of their cars to better market them. If not, he has wasted very little time and has been doing something he enjoys.
2. Teach or tutor; Every student has some subject at which they excel, whether math, english, or music. Tutoring high school students in the subject of your expertise can be rewarding and provide a good income stream. You can go through intermediary agencies, but the idea here is to make a profit for yourself, not for others. Create your own fliers and business cards and use your connections back to your high school alma mater (if you're local) or the local posh area high schools. Ask for referrals and through quality work, watch your referrals grow.
3. Look for opportunities to provide services for your fellow students. This could be in the form of concierge type services (for someone with no time to do basic things but extra cash to pay for someone else to do them)
4. Make hand-crafted goods and sell them. The internet is a great venue for selling that doesn't require retail space, going to craft shows, or any brick and mortar other than a hostel room. If you have a friend's mom who makes the best hot sauce in the world, or knits cardigans for all of her friends, there may be an opportunity to sell those goods to a wider market.

### 4. Can you think of more advantages and disadvantages regarding e-commerce? Give some suggestions regarding its improvement.

Incomplete answer .Disadvantages missing. Improvements missing.

Advantages:

- Saves Time – Do you have the specific list that you want to buy? With just a couple of clicks of the mouse, you can purchase your shopping orders and instantly move to other important things, which can considerably save time.
- Saves Fuel – One of the advantages of e-commerce is that there is no need for vehicles, so no purchase of fuel necessary.
- Saves Energy – With e-commerce, you do not need to waste your precious energy when buying anything.
- Comparison of Prices – The advanced innovations in search engines allows you to easily check prices and compare with just a few clicks. It is very straightforward to conduct price comparisons from one website to another. This gives you the freedom to determine which online seller offers the most affordable item you are going to buy.
- 24/7 Availability – Online shopping stores are open round the clock of 24/7, 7 days a week and 365 days. It is very rare to find any conventional retail stores that are open 24/7. The availability of online stores give you the freedom to shop at your own pace and convenience.
- Hate Waiting in Lines – When buying items online, there are no long lines you have to endure, just to buy your merchandise. The idea of shopping online is cutting down those bad habits of standing in a

long line and just waiting. Every online store is designed with unique individual ordering features to purchase the item.

- Easy to Search Merchandise You Want to Buy – You are able to look for specific merchandise that through its model number, style, size, color etc that you want to purchase. In addition, it is easy to determine whether the products are presently available or out of stock.

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## **LESSON 14: THE COMING REVOLUTION: ROBOTICS**

### **LEARNING OBJECTIVES**

1. To guide the learner a little into the history of robotics
2. To bring the fields of AI and NN into the ken of the learner
3. Classifying robots in front of the class
4. To bring the student's attention to the components robots are made up of
5. Familiarize the class with the kind of applications robots hold in our world
6. A little about what kind of safety practices apply to such machines

### **LESSON STARTERS**

This lesson is definitely going to be one of the easiest to get your students into.

Whoever hasn't heard of robots? Whoever hasn't heard stories of a future where machines might take precedence over all?

It is the stuff of many science fiction stories and youngster comics.

Why did humans want to build robots?

Where did humans extract the idea of robots from? What do robots tell us about the nature of being human?

These are questions to be pondered by an inquiring mind. That is exactly what you are supposed to inspire your students to do: have an curious mind. The theme of this lesson is naturally conducive for students to take such an approach.

### **TEACHING STRATEGY**

The strategy for this lesson is free of any convolutions. One very good way for you to conduct this lesson would be to browse the internet and choose a couple of videos on robotics. These videos, if shown in class would kindle your students' interest.

You may even begin by asking your class whether robot films have interested anyone.

Encourage your students to respond and relate any robots they may have seen in films. Discuss what your students saw your robots doing.

Each segment of the lesson is easy to follow. Take the learner through them one by one and stop on the way as many times as you can to discuss whether they find it interesting.

### **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 the term 'artificial intelligence' used in the field of robotics?

Artificial intelligence is a stock-phrase when it comes to talking about robots.

AI is the science of programming machines to respond autonomously. It is mainly achieved through programming the computer for every possible scenario. Therefore the concept of AI is of central importance to the field of robotics.

#### 2. What are the fundamental components of robotics? Describe briefly.

The fundamental components of robotics are:

Electronic motors

Most commonly used by robots set in industrial settings

Muscles made of actuators(motors)

These are parts of a robot which correspond to muscles in humans which convert stored energy into movement.

Sensors

These perform necessary information processing so the robot may comprehend a certain measurement of the environment.

Machine(This term is more common)vision

This happens through cameras capturing images in real time. These cameras are placed in the skull of the robot whereas the eyes are.

#### 3. Give some reasons as to why robots can be more reliable than human workers?

Present day robotic technology is most apparent in the form of automated machines. Such machines can act better than humans by performing tasks in dangerous or tedious environments.

A classical example of this is found in manufacturing plants. Robots can be seen working at higher levels of efficiency than humans ; welding, aligning wheels, denting, painting, and also washing cars in automobile manufacturing units.

#### 4. Are there any situations where robots have failed to work as efficiently as humans?

Yes, there have been such situations. Especially in case of prototype robots as they crashed, malfunctioned or even performed the opposite of what was required. That was only a natural course to take for a machine going through initial experiments. Although humans are making progress in the field of robotics, the question of allowing robots to replace humans, in much of the labor traditionally performed by them will have social and moral implications. Thinking about situations where robots have failed to be as good as humans, we can't help but wonder how smart can machines be made to able to participate organically in human affairs. This level of reaching organic capacity is the biggest challenge for robotics.

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