
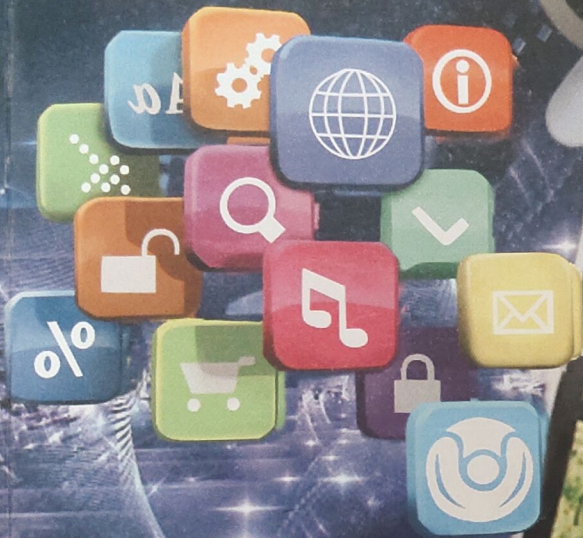


LOG ON TO **LINUX**

Revised Edition


Learning with
Edubuntu

8



Navdeep Publications

Contents



S.No.

Particulars

Page No.

1. Wireless and Cloud Technologies 1
2. LibreOffice Base 11
3. Tables and Hyperlinks 33
4. Learning Tupi 48
5. Inkscape 70
6. More on Inkscape 88
7. About Artificial Intelligence 102
8. More on Artificial Intelligence 120
9. Revising Python 135
10. Loops in Python 155
11. Cyber Threats and Protection 167

1

Wireless and Cloud Technologies

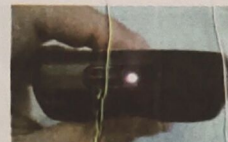
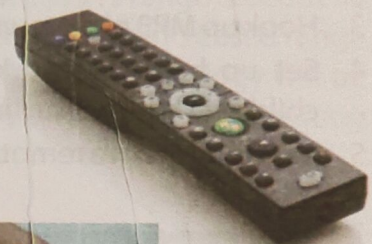
Wireless Technologies

Stumbling upon wires of networked computers or any other personal communicating devices are a thing of past. Very soon you will learn how amazing working in wireless environment is, where you see the appliances lying but not even a single wire is around. The fact is that these devices are invisibly interlinked using wireless technology and can interact with each other to share data and other resources. Let us learn about the popular wireless technologies, which are becoming popular day-by-day.

Infrared Communication

In your daily life, many times you use infrared communication. For example, using a remote control you can switch on/off and control the operations of a TV or an air-conditioner. These days laptops and cellular phones are also equipped with IrDA interface (Infrared ports) to transfer data and communicate with each other.

Although in infrared communication transmission and reception is simple and easy but the communicating devices must lie close to each other, usually called a line-of-sight distance, to be able to work.



Infrared Communication

Bluetooth Technology

Bluetooth technology uses short-range radio links to connect and replace the necessity of cables. It enables wireless data communication between bluetooth enabled devices.

The devices can be PCs, laptops, mobile telephones and headsets, PDAs, digital cameras, MP3 players, microwave ovens and so on. Even the system unit of your computer can be paired with a bluetooth enabled wireless mouse, keyboard and monitor so that there is no tangle of wires and parts can be placed even at a far distance from the system unit, as per your convenience.



Wireless Communication with Bluetooth Peripherals



Bluetooth, by its nature, is not designed for heavy transmissions and thus would not be a suitable technology for replacing LAN or WAN. Also, the distance within which bluetooth devices work is short (not more than 10m), which may be sufficient for personal devices to interact but not for LAN or WAN.



Bluetooth Adapter



FACT FILE

If your PC or Laptop is not bluetooth enabled, and you want to connect a bluetooth accessory like the wireless keyboard to it, a separate bluetooth adapter can be bought from any computer accessory store and fixed in the USB port of the PC or Laptop to make it bluetooth enabled. These adapters are very cheap and can be easily installed.

Some Uses of Bluetooth

The following are some examples of the functions that Bluetooth provides, through which users can:

1. Make calls from a wireless headset connected remotely to a cell phone;
2. Eliminate cables linking computers to printers, keyboards or mouse;
3. Hook up MP3 players wirelessly to other machines to download music;
4. Set up home networks so that a person can remotely monitor air-conditioning, oven or children's Internet surfing;
5. Call home from a remote location to turn appliances on and off, set the alarm or monitor activity.

WiFi Technology

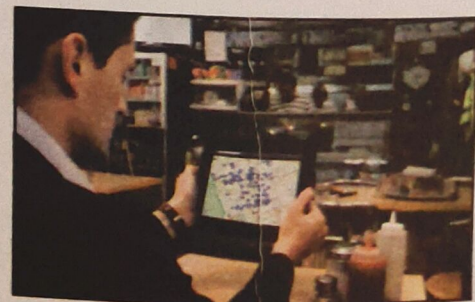
WiFi, stands for Wireless Fidelity and is a term for a high-speed wireless access technology. It is a method of connecting any WiFi equipped device (having built-in WiFi capability or a WiFi adapter card) by radio waves to each other, to a Local Area Network or to the Internet without wires.

The only condition is that devices must be within the range of a WiFi signal. WiFi technology uses long range radio waves and the coverage range is sufficiently long.

What is a Hot-Spot?

A HOT-SPOT is a zone that is enabled with high-speed wireless Internet access.

HOT-SPOTS are generally available at convenient public locations such as airports, hotels or restaurants. Using either a laptop or a handheld PDA that is WiFi enabled, you can access very high speed Internet.



A Hot-Spot





FACT FILE

Bluetooth uses short-range radio frequencies to interconnect electronic devices such as mobile phones, digital cameras and PCs or is made for different applications. It is also slower and works within a short range. On the other hand, WiFi uses long range radio waves and is seen as an alternative to a wired LAN. It has a wider range and the communication speed is much greater than that of Bluetooth.

WiMAX Technology

WiMAX is a technology standard for long-range wireless networking. The term WiMAX stands for Worldwide Interoperability for Microwave Access.

WiMAX operates on the same general principles as WiFi – it sends data from one computer to another via radio signals. A computer (either a desktop or a laptop) equipped with WiMAX would receive data from the WiMAX transmitting station.

The difference between WiFi and WiMAX

The biggest difference between WiFi and WiMAX is not speed, but distance. WiFi's range is about 30 metres. WiMAX can cover an area within a radius of 50 km with wireless access. The increased range is due to the frequencies used and the power of the transmitter. Thus, WiMAX technology will be useful to cover a whole city for Internet access, and which is much more convenient than putting lots of WiFi Hot-Spots in the city.

About Global Positioning System (GPS)

The *Global Positioning System (GPS)* is based on satellites that allows a user with a receiver to determine the precise coordinates of their location on the earth's surface.

The Global Positioning System (GPS) is a worldwide radio-navigation system formed from a constellation of 24 satellites and their ground stations. The ground stations monitor the GPS satellites, checking both their operational health and their exact position in space.



The GPS



FACT FILE

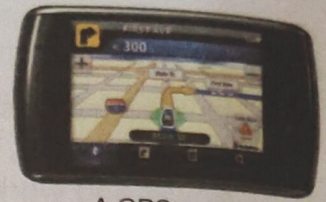
1. Distance, terrain, weather and large buildings will act to reduce the maximum range in some circumstances.
2. A satellite constellation refers to a number of satellites with coordinated ground coverage.

Quick Quiz

If you have a wireless router for accessing Internet on your various WiFi enabled devices, how can you ensure that nobody else outside your house will use it?

The GPS Receiver

The user receiving equipment is typically referred to as a GPS receiver. It processes the signals transmitted from the satellites to determine the user's position and other parameters.



A GPS receiver



FACT FILE

GPS receivers have been miniaturised to just a few integrated circuits and so have become very economical. These days the latest advanced mobile phones can act as GPS receivers.

Quick Quiz

With GPS device in your hand, you are never lost. How can you explain this statement?

Uses of GPS

The first and most obvious application of GPS is the simple determination of a "position" or location. GPS is the first positioning system to offer highly precise location data for any point on the planet, in any weather. For example, if a user has got a GPS system installed in his car and if he gets stranded or lost, GPS signals can locate his exact location and he can be rescued.

The system's position and time data is used for a variety of applications, including air, land or sea navigation, vehicle tracking, surveying or mapping and asset or natural resource management.

Connecting to the Internet on Mobile Phones

Gone are the days, when a mobile phone was used only for "talking from anywhere". Now-a-days, more than talking, it is used for playing MP3 music, surfing the Net, sending/receiving e-mails, taking digital pictures, recording videos, mobile conferencing, communicating with PCs, etc. Smartphones today have specifications like CPU, RAM, storage space, browsers, email clients, type of display, keyboard, digital camera and its zoom specifications, Infrared (IR), bluetooth and WiFi connectivity. They have almost become miniature versions of computers. You can connect to the Internet using a mobile phone, with a WiFi connection or mobile broadband technology.

Using WiFi to connect to the Internet

A cellphone with a WiFi is capable of using the Net at a very high speed and thus enables you to download large files like big e-mail attachments, music files, etc. You just need to be at a Hot-Spot to be within the range of WiFi signals.

Mobile Broadband

Mobile broadband is a general term used to describe high speed Internet access from mobile service providers (like Airtel, Vodafone, Idea, etc.) for portable devices like mobile phones and tablets. You need to have a data plan of 2G, 3G or 4G network that your cellular provider can give to access mobile broadband.

3G/4G Mobile Broadband Technology

3rd generation (3G) and 4G networks enable network operators to offer users a wider range of more advanced services like wide-area wireless voice telephony, video calls and broadband wireless data, all in a mobile environment.



3G and 4G are considered high-speed or broadband mobile Internet access, and in future the 5G networks are also expected to reach to people.

Quick Quiz

If you have to buy wireless broadband Internet access in a mobile environment, which technology will you prefer and why?

Latest Trends

The 4G networks have very high standards of speed (may be 500 times faster than 3G) and connectivity to enhance web communication and connection reliability.

Connecting your PC to 3G/4G Mobile Broadband

You can buy a 3G or 4G USB modem (dongle) which will fit in USB port of PC and for the decided data plan and service charges, you can access the Internet. Tata Photon, Reliance, Airtel are some companies which provide them. 4G technology currently becoming the common standard.

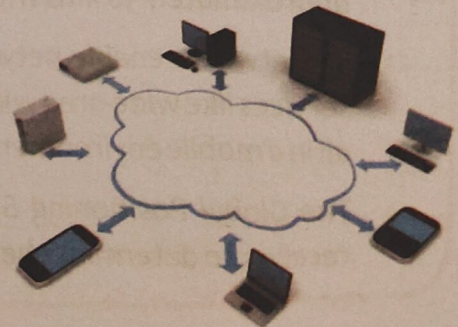
Cloud Computing

These days a school seeking solution for its school administration related computer requirements has two options:

1. The school can purchase servers, install network, purchase multiple software solutions and implement this all bearing a huge cost. This cost will be followed by monthly maintenance cost, salaries of network engineer, hardware technician and other related costs.
2. School can hire services from some software solution provider who have this kind of software on their server and school can use that software anytime from any location by connection to that server through Internet. School can pay that software service provider nominal fee for this on monthly or annual basis.

The second option is that of cloud computing.

Cloud Computing is Internet computing, where "Cloud" is the term used for the Internet. It is an Internet-based computing, whereby shared resources, software, and information are provided to computers and other devices on demand.



Typical cloud computing providers deliver common business applications online that are accessed from another web service or software like a web browser, while the software and data are stored on servers.

Advantages of Cloud Computing

The advantages of cloud computing are:

1. People world wide can access the cloud, provided they have an Internet connection.
2. There is no need to spend big money on hardware, software or licensing fee.
3. You can access the data anytime, anywhere, making your life so much easier.
4. It takes fewer people to do more work on a cloud, with less time wasted on hardware and software issues.

Latest Trends

Cloud storage is a term that refers to online space that you can use to store your data. This space is normally on remotely located servers to which you can connect anytime (by logging-in) using the Internet and access your data. Cloud storage provides a secure way to remotely store your important data. Dropbox, SkyDrive and Google Drive are some famous cloud-storage providers.



- In infrared communication for transmission and reception of signals, devices must lie close to each other (usually called a line-of-sight distance) to be able to work.
- Bluetooth technology uses short-range radio links to connect and replace the necessity of cables.
- WiFi, stands for Wireless Fidelity, is the term for a high-speed wireless access technology. It uses long range radio waves, hence the distance covered is more.
- WiMAX operates on the same general principles as WiFi but will cover a radius of approximately 50 kms with wireless access.
- 3G networks enable network operators to offer users a wider range of more advanced services like wide-area wireless voice telephony, video calls, and broadband wireless data, all in a mobile environment.
- The Global Positioning System (GPS) is based on satellites which allow a user with a receiver to determine the precise coordinates for their location on the earth's surface.

EXERCISE

Multiple Choice Questions. Tick (✓) the correct answer.

1. Remote controls use this type of wireless technology.
 - a. Infrared
 - b. Bluetooth
 - c. Wi-Fi
 - d. 3G

2. This technology uses short radio links to connect and replace necessity of cables (normally used to connect headphones to mobile phone wirelessly).
 - a. WiFi
 - b. Bluetooth
 - c. Infrared
 - d. GPS

3. The full form of WiFi is:
 - a. Wired Fidelity
 - b. Wireless Fidelity
 - c. Wired Field
 - d. Wireless Field

4. A zone enabled with high speed wireless Internet access is called:
 - a. Gold Spot
 - b. Hot-Spot
 - c. Cold Spot
 - d. Fast Spot

5. This term is used for long range wireless networking.
 - a. WiFi
 - b. WiMIN
 - c. WiMAX
 - d. MAXWi

6. This technology allows a user with receiver to determine the precise co-ordinates of their location.
 - a. SPG
 - b. PPG
 - c. GPS
 - d. PGS

7. This is an example of mobile broadband technology.
 - a. 4G
 - b. GPS
 - c. Hot-Spot
 - d. None of these

Write (T) for True and (F) for False statements.

1. Bluetooth, by its nature, is not designed for heavy transmissions and thus would not be a suitable technology for replacing LAN and WAN. (T)
2. WiFi stands for Wireless Frigidity. (F)
3. A Hot-Spot is the name of a type of tea. (F)
4. WiFi and WiMAX are used for a high-speed wireless access technology. (T)
5. WiFi has a range more than WiMAX. (F)
6. Using GPS, the exact location of a person on earth can be located precisely. (T)
7. In cloud computing, Internet is not required. (F)

Select the suitable word to fill in the blanks.

Bluetooth Adapter ^① 3G ^⑤ Radio Waves ^②
Google Drive ^④ GPS ^⑥ Cloud Storage ^③

1. A Bluetooth Adapter is a USB-based device that can transmit and receive bluetooth signals.
2. WiFi is a wireless technology that uses Radio Waves to connect WiFi equipped devices.
3. Cloud Storage is a term that refers to online space that you can use to store your data.
4. Google Drive is a cloud storage service provided by Google.
5. 3G networks enable network operations to offer users a wider range of more advanced services in a mobile environment.
6. GPS is the first positioning system to offer highly precise location data for any point on the planet, in any weather.

Answer the following in 2-3 lines.

1. What is the difference between Bluetooth and WiFi technology?

2. What is the difference between WiFi and WiMAX technology?

3. What is the use of 3G/4G network technology?

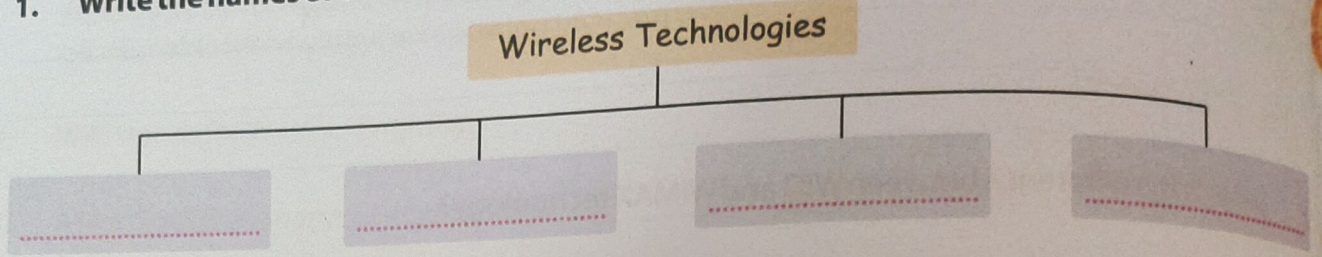
4. What is GPS? Write its uses.

5. What is Cloud Computing? Write its Advantages.

Think and Tell (Oral Questions)

1. In his car Harish is pairing speakers with his mobile phone. Which wireless technology will be right for him? → **BLUETOOTH**
2. Suresh does lot of travelling and has to use Internet too. Which is the best option for him to use the Internet? → **3G & 4G**
3. Anjali travels a lot and has to carry data in pen drive and DVDs. Can you suggest a solution for this so that she does not have to carry data with her? → **CLOUD STORAGE**

1. Write the names of different wireless technologies in the following chart.



2. Write down the full form of the following:

Wifi	▶	<input type="text"/>
WiMax	▶	<input type="text"/>
GPS	▶	<input type="text"/>
4G	▶	<input type="text"/>

3. Fill in the missing words to complete the definition of cloud computing.

Computing is Computing where is the term used for the . It is an internet based computing whereby resources, and are provided to computer and other devices on demand.

EXERCISE CH - 01

CHAPTER 01- WIRELESS AND CLOUD TECHNOLOGIES

MULTIPLE CHOICE QUESTIONS

1. INFRARED
2. BLUETOOTH
3. WIRELESS FIDELITY
4. HOT-SPOT
5. WIMAX
6. GPS
7. 4G

WRITE TRUE AND FALSE FOR STATEMENTS

1. TRUE
2. FALSE
3. FALSE
4. TRUE
5. FALSE
6. TRUE
7. FALSE

FILL IN THE BLANKS

1. BLUETOOTH ADAPTER
2. RADIO WAVES
3. CLOUD STORAGE
4. GOOGLE DRIVE
5. 3G
6. GPS

ANSWER THE FOLLOWING

Q1. What is the difference between Bluetooth and Wi-Fi technology?

Ans. Bluetooth Technology

Bluetooth Technology uses short-range radio links to connect and replace the necessity of cables. It enables wireless data communication between Bluetooth enabled devices.

Wi-Fi Technology

Wi-Fi stands for Wireless Fidelity and is a term for a high-speed wireless access technology. It is a method of connecting any Wi-Fi equipped device (having built-in Wi-Fi capability or a Wi-Fi adapter card) by radio waves to each other, to a local area network or to the internet without wires.

Q2. What is the difference between Wi-Fi and WiMAX technology?

Ans. The biggest difference between Wi-Fi and WiMAX is not speed, but distance. Wi-Fi's range is about 30 metres. WiMAX can cover an area within an area of 50 km with wireless access. The increased range is due to the frequencies used and the power of the transmitter. Thus, WiMAX technology will be useful to cover a whole city for internet access, and which is much more convenient than putting lots of Wi-Fi Hot-Spots in the city.

Q3. What is the use of 3G/4G network technology?

Ans. 3rd generation (3G) and 4th generation (4G) networks enable network operators to offer users a wide range of more advanced services like wide area wireless voice telephony, video calls and broadband wireless data, all in a mobile environment.

Q4. What is GPS? Write its uses.

Ans. Global Positioning System

The Global Positioning System (GPS) is based on satellites that allow a user with a receiver to determine the precise coordinates of their location on the earth's surface.

Uses of GPS

GPS is the first positioning system to offer highly precise location data for any point on the planet, in any weather. For example, if a user has got a GPS system installed in his car and if he gets stranded or lost, GPS signals can locate his exact location and he can be rescued.

The system's position and time data is used for a variety of applications, including air, land or sea navigation, vehicle tracking, surveying or mapping and asset or natural resource management.

Q5. What is Cloud Computing? Write its Advantages.

Ans. Cloud Computing is Internet computing, where "cloud" is the term used for the internet. It is an internet based computing where by shared resources, software, and information are provided to computers and other devices on demand.

The advantages of cloud computing are :

1. People worldwide can access the cloud, provided they have an Internet connection.
2. There is no need to spend big money on hardware, software for licensing fees.
3. You can access the data anytime, anywhere making your life so much easier.
4. It takes fewer people to do more work on a cloud, with less time wasted on hardware and software issues.

Q1. SHORT ANSWER QUESTIONS: (02 × 02) 04 Marks

1. What is the difference between Bluetooth and Wi-Fi technology?
2. What is the use of 3G / 4G network?

Q2. LONG ANSWER QUESTIONS: (03 × 02) 06 Marks

1. What is GPS? Write its uses.
2. What is Cloud Computing?

Q3. FILL IN THE BLANKS: (01 × 05) 05 Marks

1. A _____ is a USB-based device that can transmit and receive Bluetooth signals.
2. Wi-Fi is a wireless technology that uses _____ to connect Wi-Fi equipped devices.
3. _____ is a term that refers to online space that you can use to store data.
4. _____ is a cloud storage service provided by Google.
5. _____ is the first positioning system to offer highly precise location data for any point on the planet, in any weather.

Q4. STATE TRUE OR FALSE: (01 × 05) 05 Marks

1. Wi-Fi stands for Wireless Frigidity.
2. A Hot-Spot is the name of a type of tea.
3. Wi-Fi and WiMAX are used for a high-speed wireless access technology.
4. Wi-Fi has a range more than WiMAX.
5. In cloud computing, internet is not required.

Q5. MULTIPLE CHOICE QUESTIONS: (01 × 05) 05 Marks

1. Remote controls use this type of technology.
a. Infrared. b. Bluetooth.
c. Wi-Fi. d. 3G.
e. None of these.
2. The full form of Wi-Fi is.
a. Wired Fidelity. b. Wireless Fidelity.
c. Wired Field. d. Wireless Field.
e. None of these.
3. A zone enabled with high speed wireless internet access is called.
a. Gold Spot. b. Hot-Spot.
c. Cold Spot. d. Fast Spot.
e. None of these.
4. This term is used for long range wireless networking.
a. Wi-Fi. b. WiMIN.
c. WiMAX. d. MAXWi.
e. None of these.
5. This is an example of mobile broadband technology.
a. 4G. b. GPS.
c. Hot-Spot. d. Bluetooth.
e. None of these.