Learnwell

COMPUTERS

4

1 History of Computers

Let us Learn about

- Early computing devices
- Generations of computers
- Types of computers

Do You Remember

Given below are some devices used for calculations. Sort the data in the order of which appeared first?

|		
Stones	Laptop	Abacus
EDVAC	Jackquard's Loom	Desktop Computer
Leibniz Calculator	ENIAC	Difference Engine

Before the invention of computers, people used to do calculations using pebbles, stones, bones and fingers of their hands.

EARLY COMPUTING DEVICES

Let us learn about of the some of the early computing machines.

Abacus

Abacus was the first calculating device. Simple calculations like addition and subtraction could be easily performed using abacus.
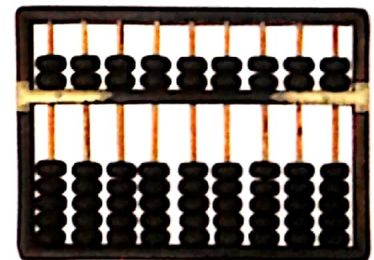
Abacus

Napier's Bones

In 1616, Sir John Napier invented a calculating device which was made up of rectangular rods. It was called Napier's bones and could do calculations such as addition, subtraction, multiplication and division. Later, an improved version was
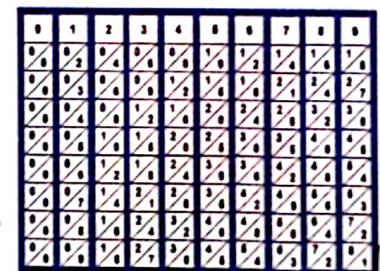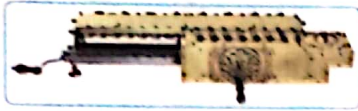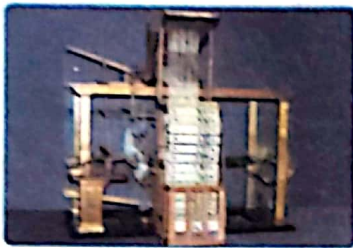

Napier's Bones

developed that could be used for division and finding square roots.

Pascaline

Pascaline

In 1642, Blaise Pascal invented a calculating machine and called it Pascaline. It consisted of a rectangular box with eight movable wheels which could calculate upto eight figures.

Leibniz Calculator

Leibniz Calculator

Gottfried Wilhelm Von Leibniz, a German mathematician and philosopher, designed a mechanical calculating device called Step Reckoner in 1671. This device could add, multiply, subtract and divide numbers.

The Jacquard Loom

The Jacquard loom

The Jacquard loom, a mechanical loom, was invented by Joseph Marie Jacquard. This machine used punched cards. The punched cards controlled the weaving of the clothes.

Harvard Mark I

Harvard Mark I

Hovard Aiken, a professor, designed an electro-mechanical calculator in 1945. It is also known as ASCC (Automatic Sequence Controlled Calculator).

ENIAC

ENIAC

ENIAC stands for **Electronic Numeric Integrator And Computer**. It was the first general purpose electronic computer. It was invented by J Presper Eckert and John Mauchly. It was used for solving numerical problems. The ENIAC used about 1,800 square feet area, 17,468 vacuum tubes and weighed 50 tons.

UNIVAC I

UNIVAC 1

UNIVAC I, short for Universal Automatic Computer, was also designed by J Presper Eckert and John Mauchly. It was the first commercial electronic computer. It handled both numbers and textual data very well.

Difference Engine

Difference Engine

In the 19th century, Charles Babbage invented the first mechanical computer. It was called the Difference Engine. It was designed to calculate polynomial functions.

New Learnwell Computers–IV

Analytical Engine

In 1833, Charles Babbage invented the Analytical engine, which could generate tables. It was the first general purpose computer and had the basic concept of input, output and memory devices that are found in modern computers.
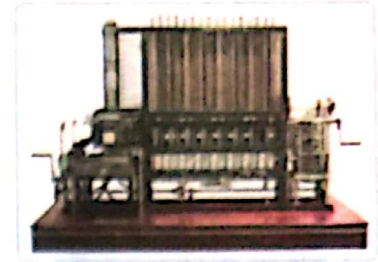
Analytical engine

GENERATIONS OF COMPUTERS

There are five generations of computers each of which is characterised by a major technological development.

First Generation (1940–1956)

The first generation computers are characterised by the use of vacuum tubes.

Characteristics

- Used magnetic drums
- Punched tape was used both as an input device and output device
- Had 1,000 circuits per square feet
- Heavy and large in size
- Very expensive

First generation computer

Examples

- ENIAC
- EDSAC
- UNIVAC I, UNIVAC II, UNIVAC 1101

Do You Know

Charles Babbage is known as the 'father of the computer'.

Second Generation (1956–1963)

The second generation computers used transistors for circuitry in place of vacuum tubes.

Characteristics

- About 1,00,000 circuits per square feet
- Smaller in size than the first generation computers
- Faster than the first generation computers
- Less expensive

Second generation computer

Example

- IBM 1400 series, 1600 series

Scanned with CamScanner

Third Generation (1964-1971)

The third generation computers used integrated circuits.

Characteristics

- 10 million circuits per square feet
- Smaller in size than the second generation computers
- Faster and more accurate than the second generation computers
- Less expensive than the second generation computers

Examples

- Honeywell 200
- IBM System 360
- ICL 1900

Third generation computer

Fourth Generation (1971-Present)

The fourth generation computer used microprocessors.

Characteristics

- Thousands of integrated circuits on a single chip
- Smaller in size
- Cheaper and faster
- Very easy to handle
- Laptops and hand-held devices were invented

Example

- IBM System 4300, ICE 2900

Fourth generation computer

Let us Do

Find out the languages used to program I^{st}, IInd, IIIrd, IVth and V^{th} generation of computers. Discuss with your classmates.

Fifth Generation (Present and Beyond)

The fifth generation computers were based on artificial intelligence. This generation is still in development.

Characteristics

- High speed logic and memory chips
- High performance
- Intelligent and has ability to take decisions on its own

Example

- Robots

Fifth generation computer

integrated circuits: set of electronic circuits on a single chip

Match the following inventions with their inventors.

Analytical Engine	John Mauchly
Napier's bones	Gottfried Leibniz
UNIVAC 1	Blaise Pascal
Stepped Reckoner	Charles Babbage
Pascaline	John Napier

TYPES OF COMPUTERS

Computers come in different sizes and types. They vary in speed, size and storage capacity. Computers are of the following types:

Microcomputer

Microcomputers are also known as personal computers or PCs. A computer with a microprocessor as the central processing unit is known as a microcomputer. They are powerful machines and are widely used in schools, homes, shops and offices. These computers can fit on desks or tables and serve best for single-user tasks. Desktop computers, Laptops and handheld devices fall under this Category.

Microcomputer

Minicomputer

In terms of size and processing capacity, minicomputers lie in between mainframes and microcomputers. Minicomputers are also called mid-range systems or workstations.

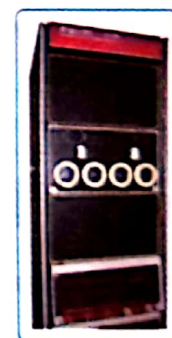The 12-bit PDP-8 and VAX are two popular examples of minicomputers.

Minicomputer (PDP-11)

Mainframe

Mainframes are huge computers with extremely large memory and very fast computing speed. They are used
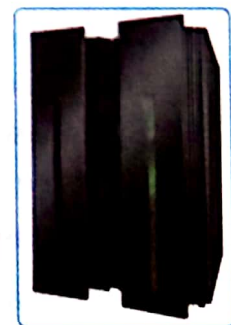

Mainframe

Workstations: desktop computers, more powerful than personal computers

Do You Know

in large organisations for highly complex applications. Examples of mainframe computers are IBM z series, System z9 and System z10.

Supercomputers

They are the most powerful computers in the world. They are used in weather forecasting, defence, space research, etc. Their processing capabilities and huge memory give them large computing powers. Cray-XMP, CDC-Cyber and Param-10000 are popular supercomputers.

Supercomputer

Now I Know

- Abacus was the first calculating device invented by man.
- There are five generations of computers each of which uses different technologies.
- Computers are categorised into four varieties according to their speed, size and memory.
- Microcomputers are also known as personal computers.
- Minicomputers are also called mid-range computers and lie between mainframes and microcomputers.
- Mainframe computers are huge computers with large memory and are used in large organisations to solve complex problems.
- Supercomputers are the most powerful computers.

Let Us Practise

A. Short answer type questions.

1. What was the first calculating device invented by man?
2. Write the names of two early computing machines?
3. Who invented the Difference engine and the Analytical engine?
4. Give two examples of supercomputers.
5. Give an example each of microcomputer and minicomputer.
6. Name the first general purpose electronic computer.

B. Long answer type questions.

1. Describe any two types of computers.
2. What are the features of second generation computers?

6

New Learnwell Computers–IV

3. Where are microcomputers used?
4. Write short note on the following:
   (a) ENIAC   (b) UNIVAC 1
   (c) Leibniz Calculator   (d) Pascaline   (e) Napier's Bones
5. Explain Difference engine and Analytical engine.

C. Fill in the blanks.

1. _____ are large computers with a large memory, high speed and are used in large organisations.
2. _____ computers can be small, medium or large in size and are placed on a desk.
3. _____ was the first calculating device.
4. _____ are the most powerful computers in the world.
5. _____ is known as the father of computer.
6. The first generation of computers used _____ for circuitry.

D. Write 'T' for true or 'F' for false.

1. In 1998, Charles Babbage invented Analytical Engine which could generate tables.
2. A computer with a microprocessor as its main component is known as a microcomputer.
3. Abacus was the first scientific calculator.
4. Jacquard Loom was a mechanical loom invented by Joseph Maria.
5. Harvard Mark I is also known as BSCC.
6. UNIVAC stands for Universal Autoprocessing computer.

E. Tick (✓) the correct answer.

1. PASCALINE was invented by
   (a) Charles Babbage   (b) Blaise Pascal
   (c) Sir John Napier   (d) None of these
2. Which of the following is an example of minicomputer?
   (a) CDC-Cyber   (b) Param-10000
   (c) VAX   (d) PDA
3. Charles Babbage invented
   (a) Abacus   (b) Napier's bones
   (c) Pascaline   (d) Difference engine

4. Which generation of computers used integrated circuits?
   (a) First
   (b) Second
   (c) Third
   (d) Fourth

5. Which of the following was the first commercial electronic Computer?
   (a) Mark I
   (b) ENIAC
   (c) Differnce engine fourth
   (d) UNIVAC 1

6. The period of fourth generation of Computers was from
   (a) 1940–1956
   (b) 1971–present
   (c) 1964–1971
   (d) 1956–1963

HOTS (Higher Order Thinking Skills)

A. Raman's father works in a space research organisation. They use computers for their tasks. What type of computers are used there?

B. This device when invented led to the development of personal computers. Name the device (technology).

ACTIVITY ZONE

A. Write the name of the technology used in the following generations of computers.

1. First generation
   _____

2. Second generation
   _____

3. Third generation
   _____

4. Fourth generation
   _____

5. Fifth generation
   _____

B. Write the answers for the following questions.
1. Napier's rods
   (a) Who invented Napier Rods?
   _____
   _____

8

(b) When were they invented?

_____

_____

(c) What functions could it perform?

_____

_____

2. Leibniz calculator

(a) Who invented Leibniz calculator?

_____

_____

(b) When was it invented?

_____

_____

(c) What functions could it perform?

_____

_____

PROJECT ZONE

A. Create a new MS Word document on generations of computers. Save the file under the name 'generations of computers'.

B. Collect different images of computers and machines that were invented before the present day computers. Make a collage using the pictures.

C. Select any one topic from the given list and write a note on its development history.

1. Mobile phone   2. Telephone   3. Television

4. Camera   5. Calculator

Weblink

- http://www.neatorama.com/2008/01/25/the-wonderful-world-of-early-computing/

Notes for the Teacher

- Hold a discussion in the class on generations of computers.
- Explain with various examples the different types of computers with their usage.
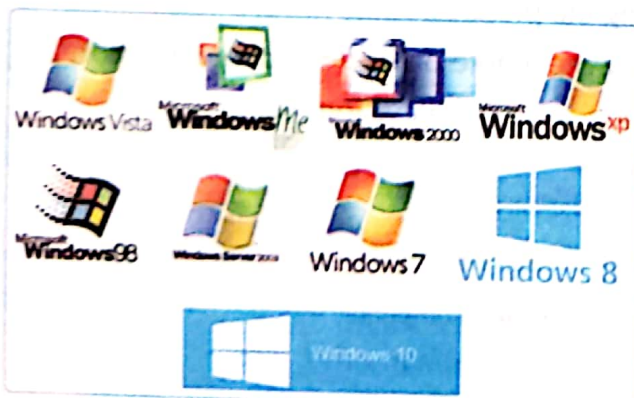
2 MS Windows

Let us Learn about

- Desktop
- Taskbar
- Files and folders
- Changing the wallpaper
- Changing the screensaver

Do You Remember

Which of the following are operating systems? Tick (✓) the correct options.

Linux	☐	Windows 3	☐	Windows 98	☐
Mac OS X	☐	Windows 11	☐	Chrome OS	☐
Windows 7	☐	Office 2013	☐		

Logos of different versions of Windows operating system

Windows is an operating system developed by Microsoft Corporation, USA. It is a system software that has a graphical user interface.

The Windows operating system helps the user to operate and control the overall activities of a computer. Windows has many versions that regularly get updated with time and requirements. Some versions are Windows 98, Windows XP, Windows 7, Window 8 and Windows 10. Logos of these versions are shown in the fig. given.

Windows was originally developed for personal computers to be used at homes and places of business.

Let us learn some features of Windows.

DESKTOP

The first screen that you see when the operating system (Windows) has finished loading is known as Desktop. It remains in the background all the time.

Some features of Desktop are:

- It is where all the icons of the different applications are displayed.
- It is the home for all shortcuts. Programs can be quickly opened by clicking on the respective shortcuts.
- It holds various information such as time and date.
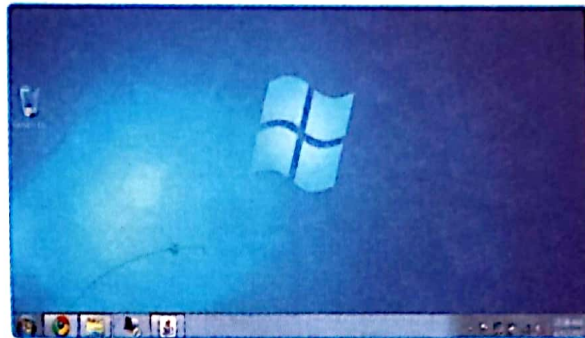
Windows 7 Desktop

Icons

Icons are small pictures of different applications that are present and installed in the computer. For example, Computer icon and Recycle Bin icon.

Computer icon

Desktop with many icons

desktop: it is a screen thats displays icons

icons: icons are small graphic symbols that represent a window element

Desktop Gadgets

A desktop gadget is a small application or a widget that resides on a computer's desktop. There are many gadgets in Windows 7 such as Clock, Calendar, CPU Meter, Currency, Feed Headlines, Picture Puzzle, Slide Show, Weather and Windows Media Center.

Adding Gadgets on Desktop

Following are the steps to add gadgets on a desktop.

- Right-click on an empty area on the desktop. Select the Gadgets option from the context menu.
- The Gadget window will open.
- Double-click on the gadget you want to put on the desktop.
- The gadget will appear on the right side of the desktop.
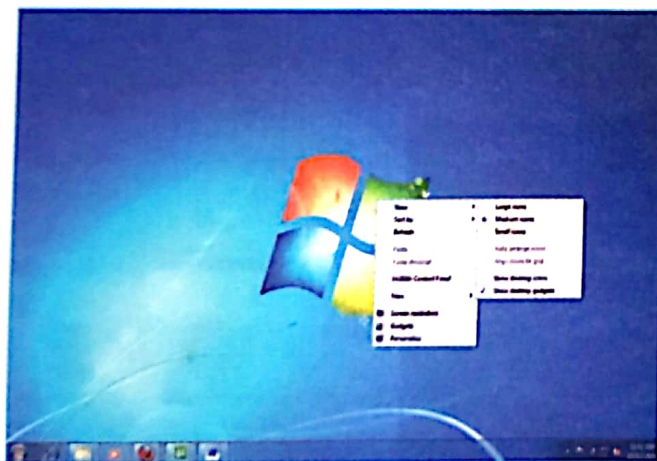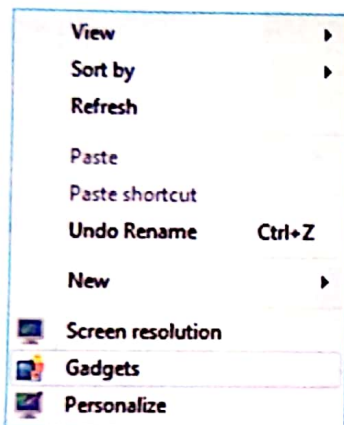
Windows 7 taskbar

TASKBAR

At the edge of the Windows screen, there lies a thin, coloured bar. This is known as the Windows taskbar. Towards the left of the taskbar, there is a circular button, labelled **Start**, that allows to quickly access the running application.

We can change the size and colour of the taskbar on the desktop.

widget: a graphical user interface element that provides a way for a user to interact with an application

taskbar: a bar at the edge of the desktop that provides quick access to applications

Changing the position of the Taskbar

- Right click on a blank area on the taskbar.

- Select the **Properties** option from the menu.

- The **Taskbar and Start Menu Properties** dialog box appears.

- Click the Taskbar tab.

- Click the drop-down menu of **Taskbar location on screen**.

- Select the desired option from the list of options.

Let's suppose, you select **Bottom**. The taskbar will then move to bottom of the desktop.
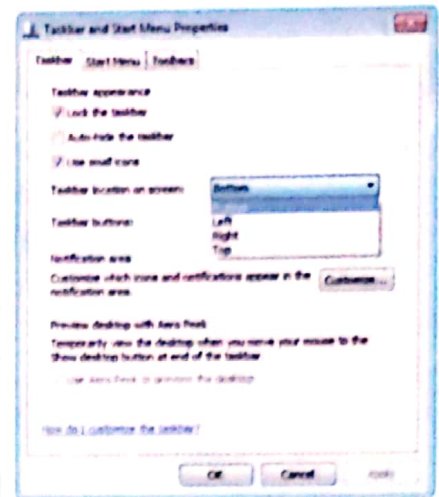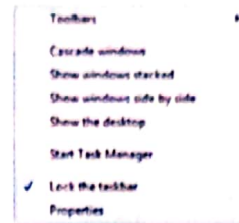
Changing Taskbar position

Start Button

The button on the taskbar with the Windows logo is known as the Start button. The Start button starts programs, opens documents and accesses most parts of the system.
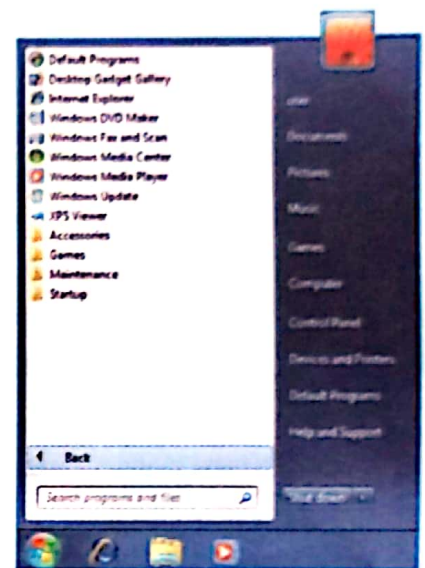
Computer

The Computer folder in Windows 7 contains all the files and folders stored in a computer. To open the Computer folder, click the Start button and then click on Computer on the right side of the window.

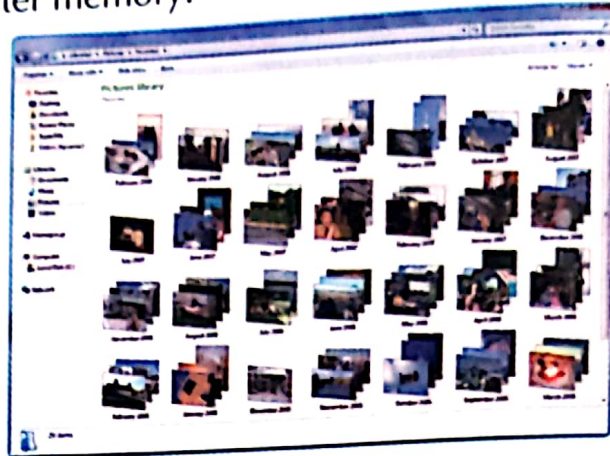You will get the following screen as shown below.

Start button

Windows Explorer

FILES AND FOLDERS

A file is a collection of related information stored in the computer memory. There are many types of files such as text files, movie files and image files. Each file has a name, called a filename, which helps to identify a particular file in the computer memory.
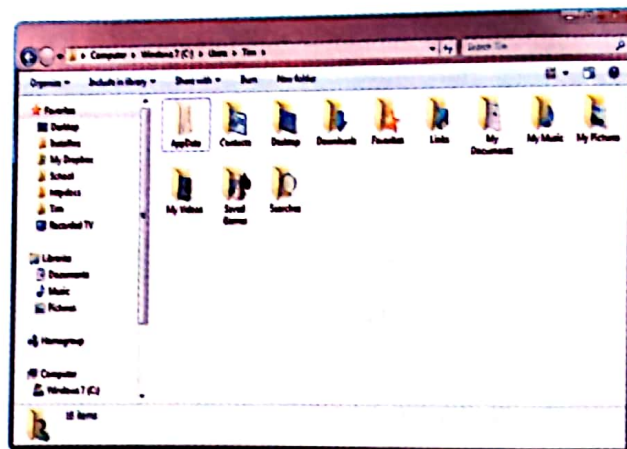
Files

A folder is like a container where all the related files are stored. Folders are used to organise files. Every folder has a name. A folder can store several files and sub-folders.

Different Folders

Look at the given picture. Here, AppData, Contacts, Desktop are all folders.

CHANGING THE WALLPAPER

The background image that we see on the desktop is called wallpaper. The wallpaper can be changed whenever we want. Any image can be applied as a desktop wallpaper.
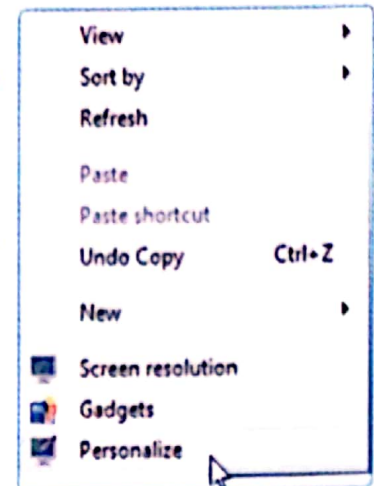
wallpaper: background image on a desktop

The steps to change the wallpaper are as follows:

- Right-click on an empty space (without selecting any icon) on the desktop.
- Click on the **Personalize** option.
- The Control Panel's personalization Pane will appear. Click on the **Desktop Background** option.
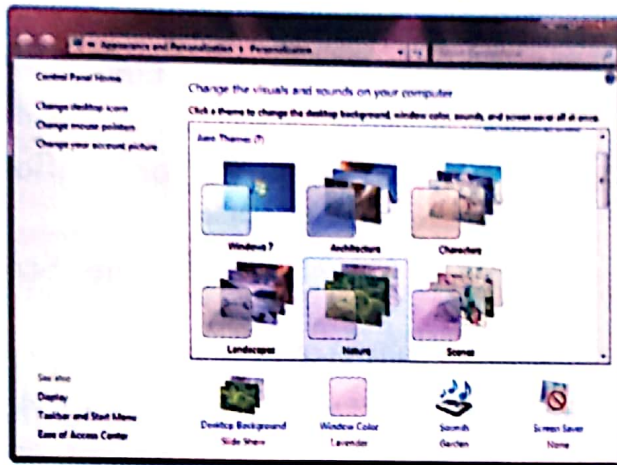
Display Properties window

Right-click

- Select any picture.
- If you want to choose a picture saved in your computer. Click the **Browse** button and select the desired file.
- Click **Save changes** to apply the changes. The selected picture will appear as the background on the desktop.

Let us Do

Take the help of your teacher and discuss the difference between icons and shortcuts.

Time to Answer

Answer the following questions.

1. What are icons? Give any two examples of icons.

   _____

2. What is a file?

   _____

3. What are folders?

   _____

4. Write the keyboard shortcut to open the Windows Explorer.

   _____

5. The Start button is located on the taskbar. Write true or false.

   _____

CHANGING THE SCREENSAVER

Screensaver is a program that automatically starts if a computer is left inactive for some time. The screensaver continues to move some images on the screen. It stops running the moment you press any key or move the mouse. The screensaver image can be changed as follows:
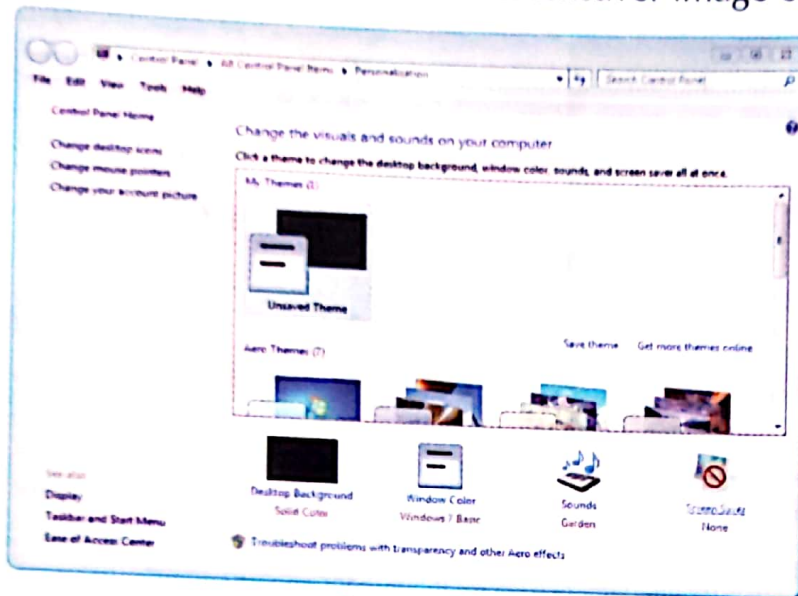
Screensaver

- Right-click on your desktop and then click the **Personalize** option.
- The **Personalisation** pane will appear.
- Click on the **Screen Saver** button.
- Click the Screen saver drop-down box and then click a screensaver of your choice from the list.
- Click on the **Preview** button to see how the screensaver will appear on your monitor.
- Click to stop the preview. Click on **OK** and then on the **Close** button.

Now I Know

- Windows is an operating system developed by Microsoft.
- The first screen that we see after Windows has finished loading is known as the desktop.
- Icons are small pictures that represent files an applications.
- Files are the collection of related information stored in the computer memory.
- Folder is the collection of related files.
- Taskbar is at the bottom of the desktop screen.
- A gadget is a widget or small application that resides on a computer's desktop.
- The background image on the desktop is called wallpaper.

screensaver: an image or animation that appears on a computer screen after a short span of inactivity

16

Scanned with CamScanner

Let Us Practise

A. **Short answer type questions.**

1. Where is the start button located?
2. What is the default position of the taskbar?
3. What is an icon?
4. What is a wallpaper and a screensaver.
5. What is a desktop gadget?

B. **Long answer type questions.**

1. Write down the steps to change the desktop wallpaper.
2. Write down the steps to change the desktop screensaver.
3. What are files and folders?
4. What do you mean by the desktop?
5. Write the steps to add gadgets on the desktop.
6. What is the use of the Computer icon?

C. **Write 'T' for true or 'F' for false.**

1. Windows is a system software developed by Microsoft.   ☐
2. A folder can store many files.   ☐
3. The position of the taskbar can be changed.   ☐
4. Ctrl + E is the keyboard shortcut to open Windows Explorer.   ☐
5. We can change the desktop wallpaper by left clicking on the taskbar.   ☐

D. **Fill in the blanks.**

1. _____ is the place where all the related files are stored.
2. The image that we see on the desktop is called _____.
3. The _____ button starts programs, opens documents and accesses most parts of the system.
4. We can change the _____ of the taskbar.
5. _____ are the shortcuts that help to open the applications quickly.
6. Windows has a _____ user interface.

E. Match the following.

1. Folder
2. Screensaver
3. Windows
4. Wallpaper
5. Icon

(a) small graphical symbols on a computer screen
(b) Image
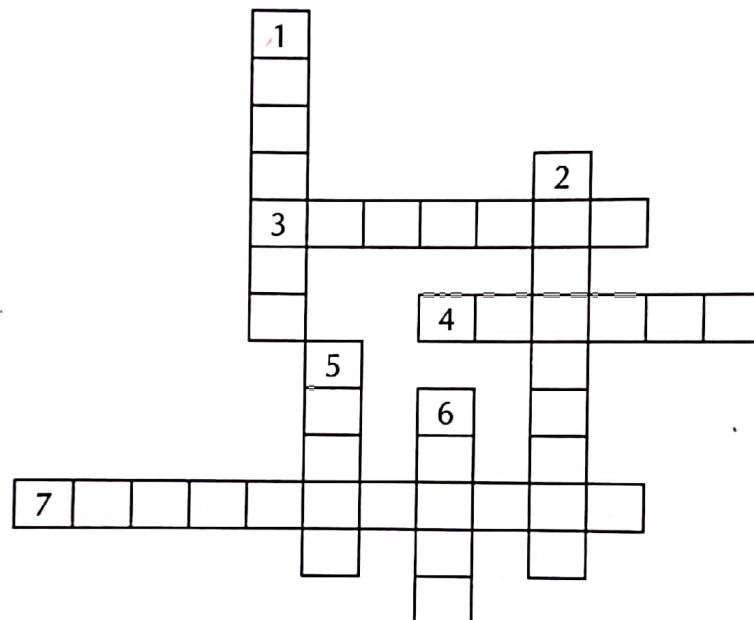(c) Time
(d) Collection of relevant files
(e) Microsoft

HOTS (Higher Order Thinking Skills)

A. Can a file contain a folder?
B. Is it possible to create a shortcut of a folder?

ACTIVITY ZONE

A. Solve the given crossword.

Across

3. A bar that provides quick access to current applications.
4. A container where all the related files can be stored.
7. An image or animation that appears on computer screen after a short span of inactivity.

Down

1. A screen that displays icon.
2. The background image on a desktop.
5. These are the small graphical elements that appear on a desktop.
6. A button present on the bottom left of the taskbar.

Scanned with CamScanner

B. Find out and write the names of the icons given below.

1.

_____

2.

_____

3.

_____

4.

_____

PROJECT ZONE

A. Change the screensaver of your computer and set it to start with the wait time of two minutes.

B. Change the wallpaper of your computer.

C. Add the Weather gadget on the desktop.

D. Change the position of the taskbar. Set its position to right of the desktop.

Weblinks

* http://www.free-computer-tutorials.net/windows-7.html
* http://www.free-computer-tutorials.net/windows-7-desktop.html

Notes for the Teacher

* Tell the difference between the desktop background and a wallpaper.
* Hold a discussion on all the versions of Windows operating system.