PYTHON PROGRAMMING

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PLAN OF PRESENTATION

- ✓ BASICS OF COMPUTER LANGUAGES
- ✓ INTRODUCTION TO PYTHON

BASICS IN COMPUTER LANGUAGE

Basic Computer Terms and Definitions

- **Computer** A computer is a device that executes a program or programs.
- **CPU** The central processing unit or CPU, also known as the microprocessor or processor is the brain of the computer.
- **Operating System** – Windows The operating system (OS) is the software that communicates with the computer hardware. No software can be run on the computer without the operating system
- **Software** – A program application Software is a program application; which provides the computer with step-by-step instructions to perform a specific task. A computer cannot function without software.

Basic Computer Terms and Definitions

- Hard Drive The hard drive is the device where the information is stored.
- Hardware Is the physical pieces of a computer; monitor, keyboard, mouse, printer, computer unit, scanner, etc.
- Peripherals Peripherals are the input/output devices that are connected to the computer. The keyboard, mouse and printer are computer peripherals.
- Networks A network is a physical or logical construction that connects different computers together and helps them communicate. Virus A computer virus is a program that is designed to harm the computer. They are basically the same thing as human viruses.

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Basic Computer Terms and Definitions

Bit A computer's most basic unit of information
Byte Small unit of data storage; 8 bits; usually holds one character
Database A large structured set of data; a file that contains numerous records that contain numerous fields
Freeware Software provided at no cost to the user
URL*Uniform resource locator*; the address of a site on the World Wide Web
Debug To detect, trace and eliminate errors in computer programs.

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Basic Computer Terms and Definitions

A computer understands instructions in machine code, i.e. in the form of 0s and 1s

The programs are written mostly in high level languages like Java, C++, Python etc. and are called **source code**

These source code cannot be executed directly by the computer and must be converted into machine language to be executed. Hence, a special translator system software is used to translate the program written in high-level language into machine code is called **Language Processor**

Basic Computer Terms and Definitions

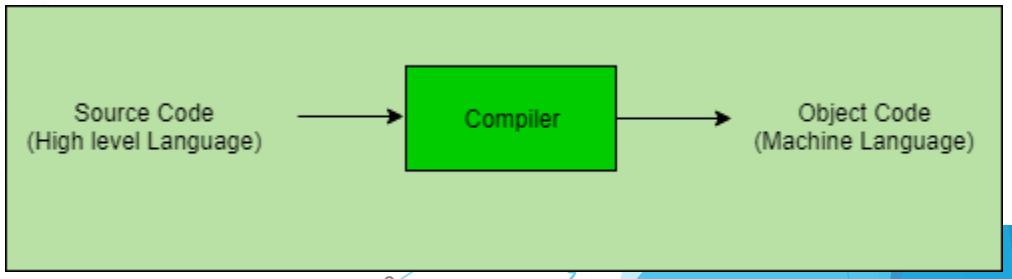
The language processors can be any of the following three types:

1.Compiler –

The language processor that reads the complete source program written in high level language as a whole in one go and translates it into an equivalent program in machine language is called as a Compiler.

Example: C, C++, C#, Java

In a compiler, the source code is translated to object code successfully if it is free of errors. The compiler specifies the errors at the end of compilation with line numbers when there are any errors in the source code. The errors must be removed before the compiler can successfully recompile the source code again.



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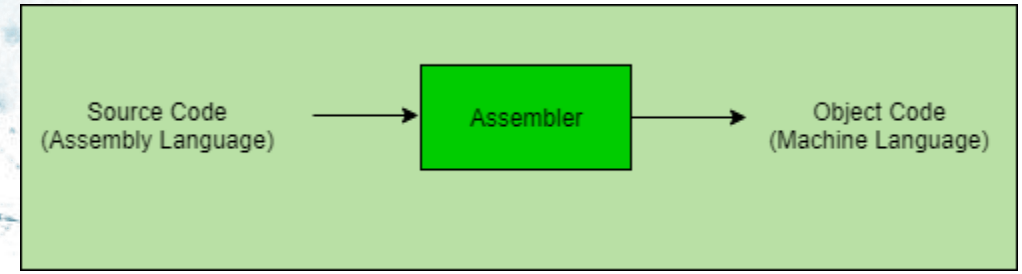
Basic Computer Terms and Definitions

Assembler –

The Assembler is used to translate the program written in Assembly language into machine code. The source program is a input of assembler that contains assembly language instructions. The output generated by assembler is the object code or machine code understandable by the computer.



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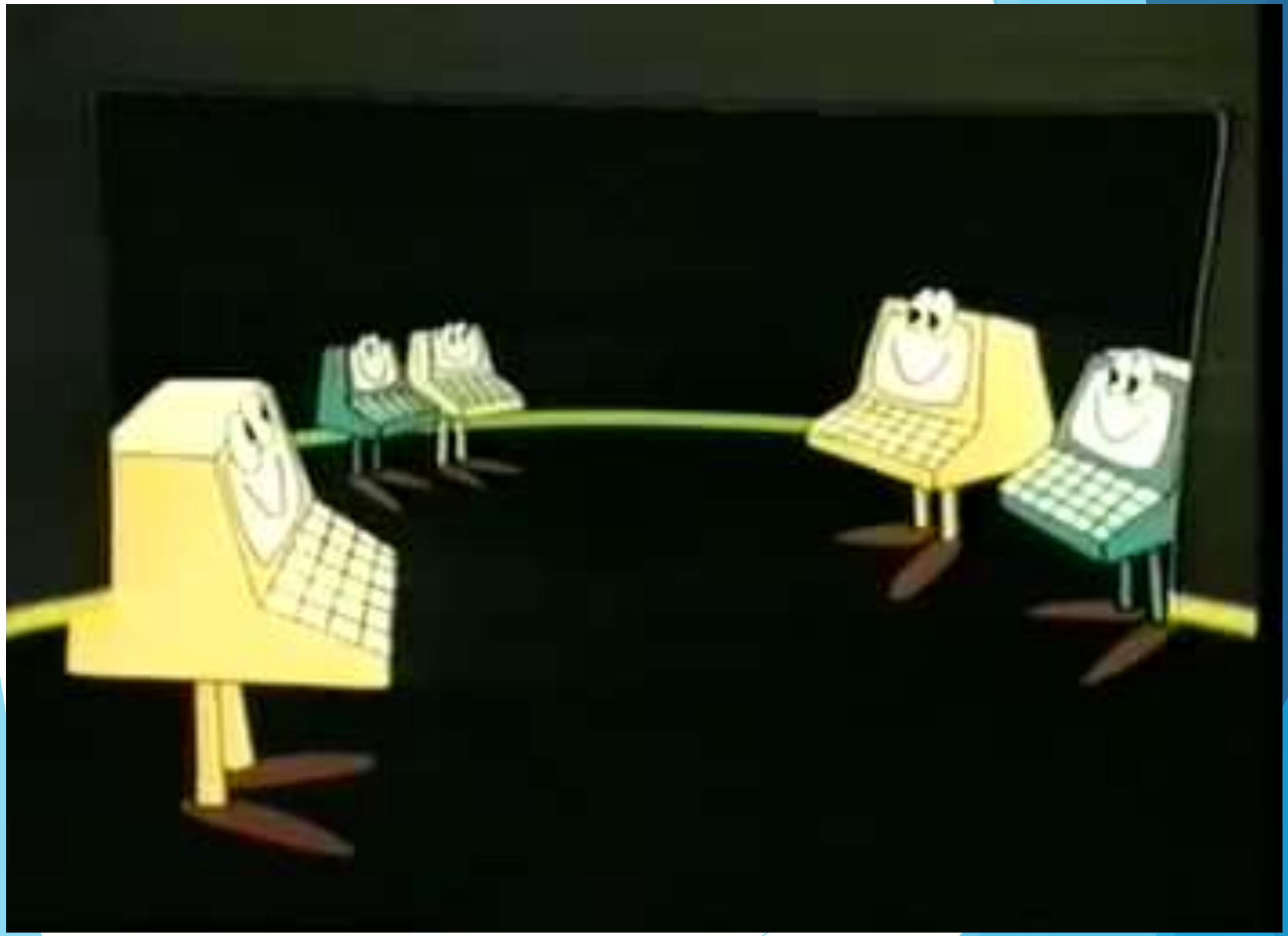
Basic Computer Terms and Definitions

Interpreter –
The translation of single statement of source program into machine code is done by language processor and executes it immediately before moving on to the next line is called an interpreter.

Example: Perl, Python and Matlab.



PYTHON

SEMESTER:III Hours : 5

Course code : U19MCA306TA1 Credit : 5

CORE COURSE-VII- PYTHON PROGRAMMING

UNIT-I

Introduction: History, Features, Setting up path, Working with Python, Basic Syntax, Variables and Data Types, Types of Operator. Conditional Statements: If,If-else,Nested if-else. Looping: For, While, Nested loops. :Break, Continue, Pass.

UNIT-II

Functions :Defining a function, Calling a function, Types of functions, Function Arguments, Global and local variables. String Manipulation, Accessing Strings, Basic Operations, Function and Methods.

- Python is an object-oriented programming language created by Guido Rossum in 1989.
- It is ideally designed for rapid prototyping of complex applications.
- It has interfaces to many OS system calls and libraries and is extensible to C or C++.
- Python programming is widely used in Artificial Intelligence, Natural Language Generation, Neural Networks and other advanced fields of Computer Science.
- Python had deep focus on code readability & this class will teach you python from basics.

- Other Libraries can be attached
- Python Libraries can be attached to other Languages
- Extensive and vast Library
- It is a Open Source
- General Purpose Language
- High level Language
- Many large companies use the Python programming language include Google,Youtube,Instagram Spotify,Yahoo,Nasa,Dropbox,Bit Torrent….

Python Versions: Python 1.0----------→Jan 1994

Python 2.0----------→Oct 2000

Python 3.0----------→Dec 2008

Python is used for:

- **web development (server-side),**
- **software development,**
- **mathematics,**
- **system scripting**.

What can Python do?

- **Python can be used on a server to create web applications.**
- **Python can be used alongside software to create workflows.**
- **Python can connect to database systems. It can also read and modify files.**
- **Python can be used to handle big data and perform complex mathematics.**
- **Python can be used for rapid prototyping, or for production-ready software development.**

Why Python?

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).
- Python has a simple syntax similar to the English language.
- Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
- Python can be treated in a procedural way, an object-orientated way or a functional way.

Python Syntax compared to other programming languages.

- Python was designed for readability, and has some similarities to the English language with influence from mathematics.
- Python uses new lines to complete a command, as opposed to other programming languages which often use semicolons or parentheses.
- Python relies on indentation, using whitespace, to define scope; such as the scope of loops, functions and classes. Other programming languages often use curly-brackets for this purpose.

- **There are two major Python versions, Python 2 and Python 3. Python 2 and 3 are quite different.**
- **Python is a fully-functional programming language that can do *anything* almost any other language can do, at comparable speeds.**
- **Python wrapper around C++ code, what someone has done is written some Python code that interacts with the C++ language. This allows you to make use of various aspects of the language being wrapped, in this case C++, without actually needing to know or understand that language.**
- **Python can be used to make games, do data analysis, control robot and hardware, create `GUIs`, or even to create websites.**
- **"GUI" stands for Graphical User Interface, and is used to describe a program that incorporates graphics to make the program more interactive for the user.**

- Cpython Original
- Cython C
- Jython Java
- Iron Python C#
- PyPy For Python

- **Python is an interpreted programming language, this means that as a developer you write Python (.py) files in a text editor and then put those files into the python interpreter to be executed.**
- **The way to run a python file is like this** Where "helloworld.py" is the name of your python file.
- **Let's write our first Python file, called helloworld.py, which can be done in any text editor.**
- **on the command line:**

C:\Users*Your Name*>python helloworld.py

helloworld.py

```
print("Hello, World!")
```

Save your file. Open your command line, navigate to the directory where you saved your file, and run:

C:\Users*Your Name*>python helloworld.py

The output should read:

Hello, World!