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COMPUTER APPLICATION

4. INTRODUCTION TO HYPERTEXT PRE-PROCESSOR

Section – A

Choose the best answer   **(1 Mark)**

1. What does PHP stand for?

    a) Personal Home Page   **b) Hypertext Preprocessor**

    c) Pretext Hypertext Processor   d) Pre-processor Home Page

2. What does PHP files have a default file extension?

    a) .html   b) .xml   **c) .php**   d) .ph

3. A PHP script should start with ___and end with ___:

    a) <php>   b) < ? php ?>   c) < ? ? >   **d) <?php ? >**

4. Which of the following must be installed on your computer so as to run PHP script?

    a) Adobe   b) windows   **c) Apache**   d) IIS

5. We can use ___ to comment a single line?

    i) /?   ii) //   iii) #   iv) /* */

    a) Only (ii)   b) (i), (iii) and (iv)   **c) (ii), (iii) and (iv)**   d) Both (ii) and (iii)

6. Which of the following PHP statement/statements will store 41 in variable num?

    i) $x=41;   ii) $x='41';   iii) $x="41";

    a) Both (i) and (ii)   b) All of the mentioned.   c) Only (iii)   **d) Only (i)**

7. What will be the output of the following PHP code?

```
<?php
$num = 1;
$num1 = 2;
print $num . "+". $num1 ;
?>
```

    a) 3   b) 1+2   c) 1.+.2   **d) Error**

8. Which of the following PHP statements will output Hello World on the screen?

    a) echo ("Hello World");   b) print ("Hello World");

    c) printf ("Hello World");   d) sprintf ("Hello World");

9. Which statement will output $x on the screen?

    a) echo "\$x";   b) echo "$$x";   c) echo "/$x";   d) echo "$x;

10. Which of the below symbols is a newline character?

    a) \r   **b) \n**   c)/n   d)/r

Section-B

Answer the following questions   **(2 Marks)**

1. What are the common usages of PHP?

  • It is very simple and lightweight open source server side scripting language.

- It can easily embed with HTML and other client side scripting languages like CSS (Cascading Style Sheets) and Java script.
- It also creates dynamic and interactive Webpages in the real time Web development projects.

2. What is Webserver?

- Webserver is software which is running in server hardware.
- It takes the responsibilities for compilation and execution of server side scripting languages.
- **Example:** Apache Tomcat, Microsoft IIS

3. What are the types scripting language?

- Web scripting languages are classified into two types,
  - Client side scripting language
  - Server side scripting language.

4. Difference between Client and Server?

CLIENT	SERVER
The client is a separate hardware machine which is connected with server in the network.	The server is a high performance hardware machine it could run more than one application concurrently.
Client is a service requester	Server is a service provider
Example: CSS (Cascading Style Sheets) and Java script	**Example:** ASP (Active Server Page) and JSP (Java Server page)

5. Give few examples of Web Browser?

  - Google Chrome
  - Mozilla Firefox
  - Opera
  - Safari
  - Internet Explorer
  - Netscape Navigator

6. What is URL?

- URL means Uniform Resource Locator.
- It is the address of a resource on the internet.

- It indicates the location of a resource and the protocol used to access it.

- **Example**: https://www.google.com/

7. Is PHP a case sensitive language?

- Yes, PHP is a case sensitive language both upper and lower case are treated differently.

- **Example:** $x and $X are different variable names.

8. How to declare variables in PHP?

- The variable in PHP begins with a **dollar ($)** symbol.

- The assignment activity implemented using **"="** operator.

- Finally the statement ends with semi colon **";"**, it indicates the end of statement.

- **Example:** $x=5;

9. Define Client Server Architecture.

- A server is a computer or a device that provides functionality for other programs or devices, called "clients".

- This architecture is called the client server model.

- A single overall computation is distributed across multiple processes or devices.

10. Define Web server.

- A Web server is a Software that uses HTTP (Hypertext Transfer Protocol) to serve the files that form Web pages to users

Section-C

Answer the following questions   (3 Marks)

1. Write the features of server side scripting language.

1. Server-side scripting prevents increasing of the load as it does not require browser scripting technology**.**

2. It is used to create pages dynamically on the fly, based on the user interaction

3. Server-side scripting is necessary to run dynamic pages on browsers.

4. Server-side scripting does not depend on browser processing as all the processing is performed on the server side.

5. As the scripting is done on the server, it is not sent back to the browser, which prevents it from hacking vulnerabilities.

6. Loading time of the web pages is often reduced with Server-side scripting .

7. An increased security is ensured for user privacy.

2. Write is the purpose of Web servers?

- Web server software that runs on server hardware, governs the server side scripting compilation into an intermediate byte-code that is then interpreted by the runtime engine.

- **Example:** Tomcat Apache, Nginx etc.

3. Differentiate Server side and Client Side Scripting language.

Server Side Scripting Language	Client Side Scripting Language
• Works on the server machine which could not be visible at the client end.	• Works at the client machine and script are visible among the users.
• Requires server interaction.	• Does not need server interaction.
• Relatively secure	• Insecure
• PHP, ASP.net, Ruby,etc	• HTML, CSS, JavaScript,etc

4. In how many ways you can embed PHP code in an HTML page?

- PHP is designed to interact with HTML and PHP scripts.

- PHP can be included in an HTML page without a problem.

- In an HTML page, PHP code is enclosed within special PHP tags in two ways,

  ➢ PHP in HTML using a **PHP script tags** ⟶ **<?php ?>**

  ➢ PHP in HTML using **Short_tags** ⟶ **<? ?>**

Example:

<html>	<html>
<body >	<body >
<?php	**<?**
$a=5;	**$a=5;**
$b=2;	**$b=2;**
$c=$a+$b;	**$c=$a+$b;**
echo $c	**echo $c**
?>	**?>**
</body>	</body>
</html>	</html>

5. Write short notes on PHP operator.

- Operator is a symbol which is used to perform mathematical and logical operations in the programing languages.

- Different types of operator in PHP are:

    1. Arithmetic operators

    2. Assignment operators

    3. Comparison operators

    4. Increment/Decrement operators

    5. Logical operators

    6. String operators

Section - D

**Answer the following questions:**   **(5 Marks)**

1. Explain client side and server side scripting language.

Web scripting languages are classified into two types, client side and server side scripting language.

Server Side Scripting Language:

➢ PHP is a Server Side Scripting Language used in a server machine.

➢ **PHP (Hypertext Pre-processor)** is a one of the important server side Web and general purpose scripting language invented by Rasmus Lerdorf in 1994.

➢ It is very simple and lightweight open source server side scripting language.

➢ It can easily embed with HTML and other client side scripting languages like CSS and Java script.

➢ It also creates dynamic and interactive Webpages in the real time projects.

➢ It is a competitor for other server side scripting languages like Microsoft ASP and JSP.

➢ PHP scripting language can be executed via an interpreter which is installed in the Webservers or CGI (Common Gateway Interface).

➢ The most of the Webservers supports the PHP interpreter module.

➢ PHP is completely different from Client side scripting language like Java script.

➢ The PHP code entirely executes on Webserver which is installed in the remote machine and it is generating HTML code which is sent to the user.

➢ The user receives the HTML code and sees the Website contents via Internet browser in their machine.

➢ PHP also supports OOPs concepts.
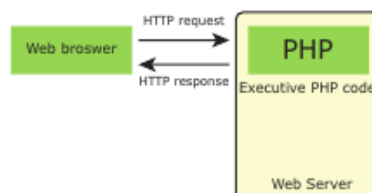
Client Side Scripting Language:

➢ Using HTML we can develop a static web pages.

➢ To develop a interactive pages (Dynamic Web page) we need a scripting language.

➢ JavaScript is a Client Side Scripting Language used in a client machine.

➢ JavaScript programming language is embed into the html.

➢ User entered data in the Dynamic Web page can be validated before sending it to the server.

➢ This saves server traffic, which means less load on your server.

➢ JavaScript includes such items as Textboxes, Buttons, drag-and-drop components and sliders to give a Rich Interface to site visitors.

2. Discuss in detail about Website development activities.

- The process of Web Development also includes Web content generation, Web page designing, Website security and so on.

PHP Script used in Web Development:

- Website or Web page is developed by the programmer using PHP script.

- Finally the entire Website codes are moved to Web server path in a remote server machine.

- From client side, the end user opens a browser, types the URL of the Website or Webpage and initiates the request to remote server machine over the network.

- After receiving the request from client machine the Web server tries to compile and interpret the PHP code which is available in remote machine.

- Next a response will be generated and sent back to the client machine over the network from Webserver.

- Finally the browser which is installed in the client machine receives the response and displays the output to user, as shown in Figure given below.
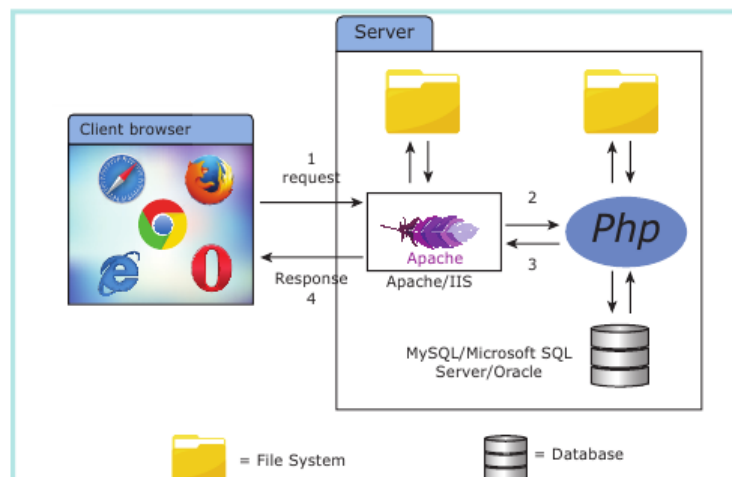
3. Explain the process of Webserver installation.

- Web server software such as Tomcat Apache, Nginx are available as open source or licensed version in the market.

Steps to install and configure Apache Httpd Webserver and PHP module in windows server machine.

Step 1:

- Go to Apache foundation Website and download the Httpd Webserver Software.

https://httpd.apache.org/download.cgi

Step2:

- After downloading .
- MSI file from Apache foundation Website, user launches the .MSI file and clicks next and next button to finish the installation on server machine.
- The software takes default port number 130 or 130130.
- Once the user finished, the Web server software is installed and configured on server hardware machine as a service.

Step 3:

- To test the installation of Apache Httpd Webserver, enter the following URL from your Web browser which is installed in your client machine.

https://localhost:130/ or https://localhost:130130

The output page that says "Its works"

Step 4:

- Administrator user can start, stop and restart the Web server service at any time via windows Control panel.
- Once the services stops, the client machine will not receive the response message from server machine.

Step 5:

- Webserver's configuration setting file "httpd.conf" is located in the **conf** directory under the apache installation directory.
- Edit this file and enable the PHP module to run PHP scripting language.

4. Discuss in detail about PHP data types.

- PHP scripting language supports 13 primitive data types.

- PHP supports the following data types.

  1. String

  2. Integer

  3. Float

  4. Boolean

  5. Array

  6. Object

  7. NULL

  8. Resource

1. String:

- String is a collection of characters within the double or single quotes like "Computer Application" or

- 'Computer Application'. Space is also considered as a character.

Example:

$x = "Computer Application!";

$y = 'Computer Application';

2. Integer:

- Integer is a data type which contains non decimal numbers.

Example:

$x = 5;

3. **Float:**

- Float is a data type which contains decimal numbers.

Example:

$x = 19.15;

4. Boolean:

- Boolean is a data type which denotes the possible two states, TRUE or FALSE.

Example:

$x = true;

5. **Array:**

- Array is a data type which has multiple values in single variable.

Example:

$cars = array("Swift","Kwid","Alto");

var_dump($cars);

> **Var_dump:**

- The var_dump() function is used to dump information about a variable.

- This function displays structured information such as type and value of the given variable.

7. **Object:**

- PHP object is a data type which contains information about data and function inside the class.

8. **NULL:**

- Null is a special data type which contains a single value: NULL

Example:

$x = null;

9. **Resources**

- Resource is a specific variable, it has a reference to an external resource.

- These variables hold specific handlers to handle files and database connections in respective PHP program.

5. Explain operators in PHP with example.

- Operator is a symbol which is used to perform mathematical and logical operations in the programing languages.

- Different types of operator in PHP are:

   1. Arithmetic operators,

   2. Assignment operators,

   3. Comparison operators,

   4. Increment/Decrement operators,

   5. Logical operators, and

   6. String operators.

Arithmetic operators

- The arithmetic operators in PHP perform general arithmetical operations, such as addition, subtraction, multiplication and division etc.

Symbol	Operator Name	Purpose
+	Addition	This operator performs the process of adding numbers
-	Subtraction	This operator performs the process of subtracting numbers
*	Multiplication	This operator performs the process of multiplying numbers
/	Division	This operator performs the process of dividing numbers
%	Modulus	This operator performs the process of finding remainder in division operation of two numbers

Assignment Operators:

- Assignment operators are performed with numeric values to store a value to a variable.
- The default assignment operator is "=".
- This operator sets the left side operant value of expression to right side variable.

Assignment	Similar to	Description
x = y	x = y	This operator sets the left side operant value of expression to right side variable
x += y	x = x + y	Addition
x -= y	x = x - y	Subtraction
x *= y	x = x * y	Multiplication
x /= y	x = x / y	Division
x %= y	x = x % y	Modulus

Comparison Operators:

- Comparison operators perform an action to compare two values.
- These values may contain integer or string data types (Number or Strings).

Assignment	Similar to	Description
x = y	x = y	This operator sets the left side operant value of expression to right side variable
x += y	x = x + y	Addition
x -= y	x = x - y	Subtraction
x *= y	x = x * y	Multiplication
x /= y	x = x / y	Division
x %= y	x = x % y	Modulus

Increment and Decrement Operators:

- Increment and decrement operators are used to perform the task of increasing or decreasing variable's value.
- This operator is mostly used during iterations in the program logics.

Operator	Name	Description
++$x	Pre-increment	Increments $x value by one, then returns $x
$x++	Post-increment	Returns $x, then increments $x by one
--$x	Pre-decrement	Decrements $x by one, then returns $x
$x--	Post-decrement	Returns $x, then decrements $x by one

Logical Operators:

- Logical Operators are used to combine conditional statements.

Symbol	Operator Name	Example	Result
&&	And	$x && $y	True if both $x and $y are true
||	Or	$x || $y	True if either $x or $y is true
!	Not	!$x	True if $x is not true
xor	Xor	$x xor $y	True if either $x or $y is true, but not both

String Operators:

- Two operators are used to perform string related operations such as Concatenation and Concatenation assignment (Appends).

Operator	Name	Example	Result
.	Concatenation	$text1 . $ text2	Concatenation of $txt1 and $txt2
.=	Concatenation assignment	$text1 .= $ text2	Appends $txt2 to $txt1

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COMPUTER SCIENCE

5. PYTHON - VARIABLES AND OPERATORS

Section – A

Choose the best answer   **(1 Mark)**

1. Who developed Python ?

    A) Ritche   **B) Guido Van Rossum**

    C) Bill Gates   D) Sunder Pitchai

2. The Python prompt indicates that Interpreter is ready to accept instruction.

    A) >>>   B) <<<

    C) #   D) <<

3. Which of the following shortcut is used to create new Python Program ?

    A) Ctrl + C   B) Ctrl + F

    C) Ctrl + B   **D) Ctrl + N**

4. Which of the following character is used to give comments in Python Program ?

    A) #   B) &   C) @   D) $

5. This symbol is used to print more than one item on a single line.

    A) Semicolon(;)   B) Dollor($)

    C) comma(,)   D) Colon(:)

6. Which of the following is not a token ?

    A) Interpreter   B) Identifiers

    C) Keyword   D) Operators

7. Which of the following is not a Keyword in Python ?

    A) break   B) while

    C) continue   **D) operators**

8. Which operator is also called as Comparative operator?

    A) Arithmetic   **B) Relational**

    C) Logical   D) Assignment

9. Which of the following is not Logical operator?

    A) and   B) or

    C) not   **D) Assignment**

10. Which operator is also called as Conditional operator?

    A) Ternary   B) Relational

    C) Logical   D) Assignment

Section-B

Answer the following questions   **(2 Marks)**

1. What are the different modes that can be used to test Python Program ?

- In Python, programs can be written in two ways namely **Interactive mode** and **Script mode.**

- **Interactive mode** allows us to write codes in Python command prompt **(>>>).**

- **Script mode** is used to create and edit python source file with the extension **.py**

2. Write short notes on Tokens.

- Python breaks each logical line into a sequence of elementary lexical components known as **Tokens**.

- The normal token types are ,

    1) Identifiers,

    2) Keywords,

    3) Operators,

    4) Delimiters and

    5) Literals.

3. What are the different operators that can be used in Python ?

- **Operators are special symbols** which represent computations, conditional matching in programming.

- Operators are categorized as Arithmetic, Relational, Logical, Assignment and Conditional.

4. What is a literal? Explain the types of literals ?

- Literal is a raw data given in a variable or constant.

- In Python, there are various types of literals. They are,

    1) **Numeric Literals** consists of digits and are immutable

    2) **String literal** is a sequence of characters surrounded by quotes.

    3) **Boolean literal** can have any of the two values: True or False.

5. Write short notes on Exponent data?

- An Exponent data contains decimal digit part, decimal point, exponent part followed by one or more digits.

- **Example:**   12.E04, 24.e04

Section-C

Answer the following questions   **(3 Marks)**

1. Write short notes on Arithmetic operator with examples.

- An arithmetic operator is a mathematical operator used for simple arithmetic.

- It takes two operands and performs a calculation on them.

- **Arithmetic Operators used in python:**

Operator - Operation	Examples	Result
Assume a=100 and b=10. Evaluate the following expressions		
+ (Addition)	>>> a + b	110
- (Subtraction)	>>>a – b	90
* (Multiplication)	>>> a*b	1000
/ (Divisioin)	>>> a / b	10.0
% (Modulus)	>>> a % 30	10
** (Exponent)	>>> a ** 2	10000
// (Floor Division)	>>> a//30 (Integer Division)	3

2. What are the assignment operators that can be used in Python?

- '=' is a simple **assignment operator** to assign values to variable.

- There are various **compound operators** in Python like **+=, -=, *=, /=, %=, **= and //=.**

- **Example:**

    a=5   # assigns the value 5 to a

    a,b=5,10   # assigns the value 5 to a and 10 to b

    a+=2   # **a=a+2**, add 2 to the value of 'a' and stores the result in 'a' (Left hand operator)

3. Explain Ternary operator with examples.

- Ternary operator is also known as **conditional operator** that evaluates something based on a condition being true or false.

- It simply allows testing a condition in a single line replacing the multiline if-else making the code compact.

Syntax:

   Variable Name = [on_true] if [Test expression] else [on_false]

Example :

   min = 50 if 49<50 else 70   # Output**: min = 50**

4. Write short notes on Escape sequences with examples.

- In Python strings, the backslash **"\"** is a special character, also called the **"escape"** character.

- It is used in representing certain whitespace characters.

- Python supports the following escape sequence characters.

Escape sequence character	Description	Example	Output
\\	Backslash	>>> print("\\test")	\test
\'	Single-quote	>>> print("Doesn\'t")	Doesn't
\"	Double-quote	>>> print("\"Python\"")	"Python"
\n	New line	print("Python","\n","Lang..")	Python Lang..
\t	Tab	print("Python","\t","Lang..")	Python Lang..

5. What are string literals? Explain.

- In Python a string literal is a **sequence of characters** surrounded by **quotes**.

- Python supports **single, double and triple quotes** for a string.

- A character literal is a **single character** surrounded by **single or double quotes**.

- The value with **triple-quote ''' '''** is used to give **multi-line** string literal.

- **Example:**

  strings = "This is Python"

  char = "C"

  multiline_str = "' This is a multiline string with more than one line code."'

  print (strings)

  print (char)

  print (multiline_str)

- **Output:**

  This is Python

  C

  This is a multiline string with more than one line code.

Section - D

Answer the following questions: **(5 Marks)**
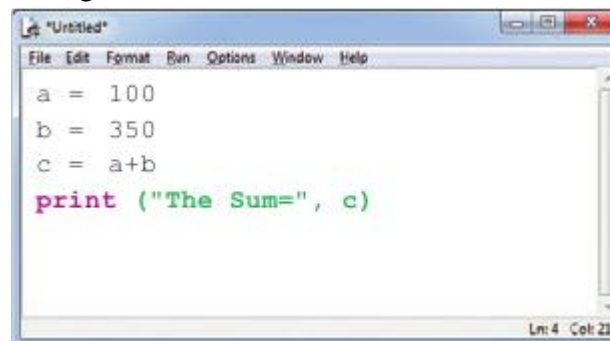
1. Describe in detail the procedure Script mode programming.

SCRIPT MODE PROGRAMMING:

- A script is a text file containing the Python statements.
- Once the Python Scripts is created, they are reusable , it can be executed again and again without retyping.
- The Scripts are editable.

(i) Creating Scripts in Python

1. Choose **File → New File** or press **Ctrl + N** in Python shell window.
2. An **untitled** blank script text editor will be displayed on screen.
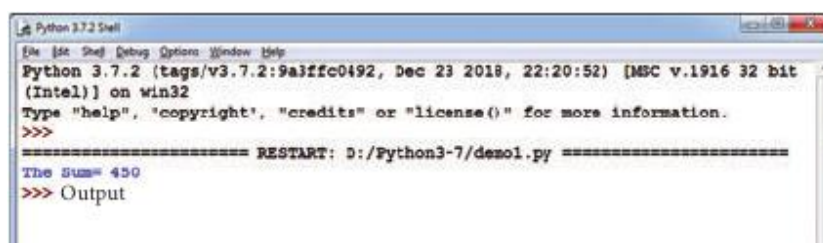3. Type the code in Script editor as given below,

(ii) Saving Python Script

(1) Choose **File → Save** or Press **Ctrl + S**

(2) Now, **Save As** dialog box appears on the screen.

(3) In the **Save As** dialog box

- Select the location to save your Python code.
- Type the file name in **File Name** box.
- Python files are by default saved with extension **.py.**
- So, while creating scripts using Python Script editor, no need to specify the file extension.

(4) Finally, click **Save** button to save your Python script.

(iii) Executing Python Script

(1) Choose **Run → Run Module** or Press **F5**

(2) If your code has any error, it will be shown in red color in the IDLE window, and Python describes the type of error occurred.

  ➢ To correct the errors, go back to Script editor, make corrections, save the file and execute it again.

(3) For all error free code, the output will appear in the IDLE window of Python as shown in **Figure.**

2. Explain input() and print() functions with examples.

Input and Output Functions

- A program needs to interact with the user to accomplish the desired task; this can be achieved using **Input-Output functions**.

- The **input()** function helps to enter data at run time by the user

- The output function **print()** is used to display the result of the program on the screen after execution.

1) print() function

- In Python, the **print()** function is used to display result on the screen.
- **Syntax for print():**

        print ("string to be displayed as output ")

        print (variable)

        print ("String to be displayed as output ", variable)

        print ("String1 ", variable, "String 2", variable, "String 3" ......)

- **Example:**

```
>>> print ("Welcome to Python Programming")
        Welcome to Python Programming
>>> x = 5
>>> y = 6
>>> z = x + y
>>> print (z)
        11
>>> print ("The sum = ", z)
        The sum = 11
>>> print ("The sum of ", x, " and ", y, " is ", z)
        The sum of 5 and 6 is 11
```

- The **print ( )** evaluates the expression before printing it on the monitor.
- The print () displays an entire statement which is specified within print ( ).
- **Comma (,)** is used as a separator in **print ( )** to print more than one item.

2) input() function

- In Python, **input( )** function is used to accept data as input at run time.
- The syntax for **input()** function is,

        Variable = input ("prompt string")

- **"Prompt string"** in the syntax is a message to the user, to know what input can be given.
- If a prompt string is used, it is displayed on the monitor; the user can provide expected data from the input device.
- The **input( )** takes typed data from the keyboard and stores in the given variable.
- If prompt string is not given in **input( )**, the user will not know what is to be typed as input.

- **Example:**

Example 1:input( ) with prompt string

```
>>> city=input ("Enter Your City: ")
Enter Your City: Madurai
```

Example 2:input( ) without prompt string

```
>>> city=input()
Rajarajan
```

- In **Example 1** input() using prompt string takes proper input and produce relevant output.
- In **Example 2** input() without using prompt string takes irrelevant input and produce unexpected output.
- So, to make your program more interactive, provide prompt string with **input( ).**

Input() using Numerical values:

- The **input ( )** accepts all data as string or characters but not as numbers.
- The **int( )** function is used to convert string data as integer data explicitly.
- **Example:**

```
x = int (input("Enter Number 1: "))
y = int (input("Enter Number 2: "))
print ("The sum = ", x+y)
```

Output:
```
Enter Number 1: 34
Enter Number 2: 56
The sum = 90
```

3. Discuss in detail about Tokens in Python.

Tokens

- Python breaks each logical line into a sequence of elementary lexical components known as **Tokens**.
- The normal token types are
    1) Identifiers,
    2) Keywords,
    3) Operators,
    4) Delimiters and
    5) Literals.
- Whitespace separation is necessary between tokens, identifiers or keywords.

1) Identifiers

- An Identifier is a name used to identify a variable, function, class, module or object.
- An identifier must start with an alphabet (A..Z or a..z) or underscore (_).
- Identifiers may contain digits (0 .. 9)
- Python identifiers are case sensitive i.e. uppercase and lowercase letters are distinct.
- Identifiers must not be a **python** keyword.
- Python does not allow punctuation character such as %,$, @ etc., within identifiers.
- **Example of valid identifiers:** Sum, total_marks, regno, num1
- **Example of invalid identifiers:** 12Name, name$, total-mark, continue

2) Keywords
- Keywords are special words used by Python interpreter to recognize the structure of program.
- Keywords have **specific meaning for interpreter**, they cannot be used for any other purpose.
- **Python Keywords:** false, class, If, elif, else, pass, break etc.

3) Operators
- **Operators are special symbols** which represent computations, conditional matching in programming.
- Operators are categorized as Arithmetic, Relational, Logical, Assignment and Conditional.
- Value and variables when used with operator are known as **operands**.
- **Example:**

  a=100
  b=10
  print ("The Sum = ",a+b)
  print ("The a > b = ",a>b)
  print ("The a > b or a == b = ",a>b or a==b)
  a+=10
  print("The a+=10 is =", a)

- **Output:**

  The Sum = 110
  The a>b = True
  The a > b or a == b = True
  The a+=10 is= 110

4) Delimiters
- Python uses the symbols and symbol combinations as delimiters in expressions, lists, dictionaries and strings.
- Following are the delimiters.

(	)	[	]	{	}
,	:	.	'	=	;
+=	-=	*=	/=	//=	%=
&=	|=	^=	>>=	<<=	**=

5) Literals
- Literal is a raw data given in a variable or constant.
- In Python, there are various types of literals. They are,
  1) **Numeric Literals** consists of digits and are immutable
  2) **String literal** is a sequence of characters surrounded by quotes.
  3) **Boolean literal** can have any of the two values: True or False.

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