GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING

UNIT – II

DATA, EXPRESSIONS, STATEMENTS

PART-A

1. What is meant by interpreter?

An interpreter reads a high-level program and executes it. It takes single instruction as input and executes one line at a time. Errors are displayed for every instruction.

Example: Python, java.

2. Define the two modes in Python.

➢ **Iterative Mode:** It allows writing codes in python command prompt. The Chevron >>> is the prompt used by the interpreter to indicate that it is ready to accept input. Here code will produce immediate results. It is useful to test small codes.

➢ **Script Mode:** It is a text file containing the python statements. In this mode python program is typed in a file and then using interpreter it will be executed to get the output. It can be used and again for execution.

3. List down the basic data types in python. / Name the four types of scalar objects python has.

➢ Number
➢ String
➢ List
➢ Tuple
➢ Dictionary

4. Define Keyboard and Enumerate some of the keywords in pythons.

A keyword is a reserved word that has special meaning. It cannot be used as identifiers. Python has 33 keywords.

Example: and, if, elif, while, for, is, continue

5. Define a variable and write down the rules for naming variable.

Variable is a name that refers to a value. When a variable is created it will allocate some memory space to store values in memory.

- Identifiers must start with alphabet or an underscore (_)
- It should not start with numbers.

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- Keywords cannot be used as identifiers.
- It is case-sensitive.
- Identifier can be of any length

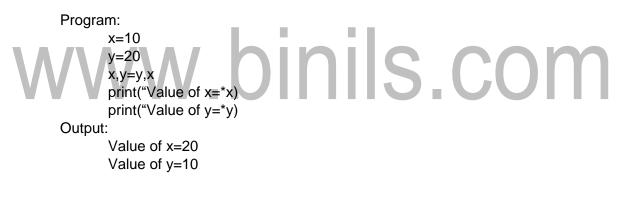**6. Define an expression with Example.**

An expression is a combination of values, variables, and operators. An expression is evaluated using assignment operator.

Example: Y=X+17

7. Define statement and mention the difference between statement and an expression.

Instruction that a python interpreter can execute are called statement. A statement is a unit of code like creating a variable or displaying a value. The important difference is that an expression has a value but a statement does not have a value.

8. Outline the logic to swap the contents of two identifiers without using third variables.

Program:
```
x=10
y=20
x,y=y,x
print("Value of x="x)
print("Value of y="y)
```
Output:
```
Value of x=20
Value of y=10
```

9. List down the different types of operator.

- Arithmetic operator
- Relational operator
- Assignment operator
- Logical operator
- Bitwise operator
- Membership operator
- Identity operator

10. State about logical operator available in python language with example.

Logical operators are used to check two or more conditions at the same time. It returns Boolean value.
- And-if all conditions are True it means True otherwise False.
- Or-if any one of the conditions is True it returns True otherwise False.

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- Not-if the input is true output will be false and vice-versa.

11. What do you mean by an operand and an operator? Illustrate your answer with relevant Example.

An operator is a symbol used to perform operation on the operands. Operands are variables or values to which operation must be performed.

Example: a+20*b-32
In this example: a,b, 20 and 32 are operand and +,* and – are operators.

12. What is meant by rule of precedence? Give the order of precedence.

The set of rules that govern the order in which expressions involving multiple operators and operands are evaluated is known as rule of precedence. "PEMDAS" is an acronym used to remember the precedence of operators. Parentheses have the highest precedence followed by exponentiation. Multiplication and division have the next highest precedence followed by addition and subtraction.

13. What is the use of parantheses?

Parentheses have the highest precedence and can be used to evaluate an expression in the order you want. Using this associativity of operators can be changed. It also makes an expression easier to read.
Example: [2+5)-12/4*7

14. Compose the importance of indentation in python.

In python language, indentation is used to determine the structure instead of using braces. A block defined using indentation and ends with unindentation. It makes reader to be comfortable enough to go through the program and understand the meaning.

15. What is the purpose of using comment in python program?

Comment statements are used to add additional information about a program or a statement to explain it in Natural language. It starts with hash symbol #. When python interpreter see # sign it ignores all the text after # sign till the end of that line.
Example: ans =l*b #it calculates area of Rectangle

16. Define function.

Functions are set of related statements that will perform a specific task. It helps to break the program into small units. It makes program small by eliminating repetitive codes. Small parts of program can be debugged and tested separately.

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17. State the reasons to divide programs into functions.

It makes program small by eliminating repetitive codes provides Re-usability, Small parts of program can be debugged and tested separately. The length of a program can be reduced.

18. Define arguments and parameter.

Arguments- Values provided in function call are called as Arguments. It is also called as Actual Arguments

Parameters- Values provided in function call are called as Parameters. It is also called as formal arguments.

```
Example:
        Def Add(x,y):     #function Definition
                Print(x,y)
        a=10
        b=15
        Add(a,b)     #function call
Here x and y are formal parameters. a and b are actual parameters.
```

19. What is a local variable?

A variable defined inside a function is called as local variable. It can only be accessed, used and visible only within the function.

Example:

Def Display();

A=30   #Local Variable

Print ("Value of a = ",a)

Display()

Output: Value of a -30

20. What is a global variable?

Global variables are the one that are defined and declared outside a function. It can only be accessed, used and visible anywhere in the program.

```
Example:
        a=10    #Global Variable
        def Display();
                print("Value of a=",a)
        Display()
        Output: Value of a = 10
```

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21. Comment with an example on the use of local and global variable with the same identifier name.

A variable defined inside a function is called as local variable. It can only be accessed, used and visible only within the function.

Example:

```
a=10        #Global Variable
def Display();
        a=30    #Local Variable
        Print("Value of a inside function=",a)
Display()
Print("Value of a outside function=",a)
```

Output:

```
Value of a inside function = 30
Value of a outside function = 10
```

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