1. What are the differences between operators and values in the following?

*

'hello'

-87.8

-

/

+

6

Ans: In the given question

Operators are +,   -   , * , /

Addition(+): if we have operands then + gives sum of the operands

Subtraction(-): if we have operands then - gives subtraction of the operands

Multiplication(*): if we have operands then * gives multiplication of the operands

Division(/): if we have operands then / gives division of the operands

Values are 'hello', -87.8 , 6

 'hello' : String

-87.6 : Float Value

6 : Integer Value

2. What is the difference between string and variable?

spam

'spam'

Ans:

String: string is a data type for a sequence of characters. Characters can include letters, numbers, spaces, punctuation, and even line breaks. A string Can be defined either with single quotes or with Double quotes.

Ex: 'spam'

Variables: When Variables are created then these variables will allocate some memory for that variable and the address of that Variable is referenced whenever the variable is called. We can assign different datatypes to that Variable.

Ex: spam

3. Describe three different data forms.

Ans:

Qualitative and Quantitative:

Qualitative data can't be expressed as a number and can't be measured. Qualitative data consist of words, pictures, and symbols, not numbers. Qualitative data is also called categorical data because the information can be sorted by category, not by number. Qualitative data can answer questions such as "how this has happened" or and "why this has happened".

Examples of qualitative data:

    a. Colors e.g. the color of the sea
    b. Names as John, Patricia,…..
    c. Ethnicity such as American Indian, Asian, etc.

Quantitative data can be expressed as a number or can be quantified. It can be measured by numerical variables. It answers key questions such as "how many, "how much" and "how often".

Examples of quantitative data:

    a. Scores on tests and exams e.g. 85, 67, 90 and etc.
    b. The weight of a person or a subject.
    c. The temperature in a room.

Continuous and Discrete Data:

Continuous data is information that could be meaningfully divided into finer levels. It can be measured on a scale or continuum and can have almost any numeric value.

For example, you can measure your height at very precise scales — meters, centimeters, millimeters and etc. heights: 52.04762 inches, 69.948376 inches

Examples of continuous data:

    a. The amount of time required to complete a project.
    b. The height of children.
    c. The square footage of a two-bedroom house.

Discrete data is a count that involves only integers. The discrete values cannot be subdivided into parts. For example, the number of children in a class is discrete data. We can count whole individuals. We can't count 1.5 kids.

Examples of discrete data:

a. The number of students in a class.
b. The number of workers in a company.
c. The number of home runs in a baseball game.
d. The number of test questions you answered correctly

Primary and Secondary Data:

Primary data means the raw data (data without fabrication or not tailored data) which has just been collected from the source and has not gone any kind of statistical treatment like sorting and tabulation. The term primary data may sometimes be used to refer to first hand information.

Sources of Primary Data: The sources of primary data are primary units such as basic experimental units, individuals, households.

Secondary Data which has already been collected by someone, may be sorted, tabulated and has undergone a statistical treatment. It is fabricated or tailored data.

Nominal vs Ordinal Data:

Nominal data is used just for labeling variables, without any type of quantitative value. The name 'nominal' comes from the Latin word "nomen" which means 'name'.

The nominal data just name a thing without applying it to order. Actually, the nominal data could just be called "labels."

Examples of Nominal Data:

a. Gender (Women, Men)
b. Hair color (Blonde, Brown, Brunette, Red, etc.)
c. Marital status (Married, Single, Widowed)
d. Ethnicity (Hispanic, Asian)

Ordinal data shows where a number is in order. This is the crucial difference from nominal types of data. Ordinal data is data which is placed into some kind of order by their position on a scale. Ordinal data may indicate superiority. However, we cannot do arithmetic with ordinal numbers because they only show sequence.

Examples of Ordinal Data:

a. The first, second and third person in a competition.
b. Letter grades: A, B, C, and etc.
c. When a company asks a customer to rate the sales experience on a scale of 1-10.

4. What makes up an expression? What are the functions of all expressions?

Ans:

Combination of symbols such as a variable, constants, and operators will make up an Expression. An expression should have at least one operand (variable or constant) and have one or more operators.

The functions of all expressions is to return a value after certain evaluation.

Ex: a+b-c*d/e+12*18 , x+y*z-8

5. In this chapter, assignment statements such as spam = 10 were added. What's the difference between a declaration and an expression?

Ans:

6. After running the following code, what does the variable bacon contain?

bacon = 22

bacon + 1

Ans: bacon = 22

7. What should the values of the following two terms be?

'spam' + 'spamspam'

'spam' * 3

Ans:

'spam' + 'spamspam' = 'spamspamspam'

'spam' * 3 ='spamspamspam'

8. Why is it that eggs is a true variable name but 100 is not?

Ans:

A variable name must start with a letter or underscore. Hence eggs is a valid variable.

variable name cannot start with a number. Hence 100 is not a valid variable.

9. Which of the following three functions may be used to convert a value to an integer, a floating-point number, or a string?

Ans: All the three functions are used to covert a value to an integer, a floating-point number, or a string.

Ex: a = int(5.5)

Print(a)

Output: 5

Ex: b = float(5)

Print(b)

Output: 5.0

Ex: c = str(5)

Print(c)

Output: '5'

10. What is the error caused by this expression? What would you do about it?

'I have eaten ' + 99 + ' burritos.'

Ans:

the error caused by this expression 'I have eaten ' + 99 + ' burritos.' is **TypeError.**

To avoid error 99 should also be in string format. So typecast 99 to string I,e '99'

'I have eaten ' + '99' + ' burritos.'

Or

'I have eaten ' + str(99) + ' burritos.'