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INTRODUCTION TO COMPUTERS, PROGRAMS AND JAVA

Variables:

- ❖ A variable is an identifier that denotes a storage location used to store a data value. A variable is the basic unit of storage in a program.
- ❖ Unlike constants that remain unchanged during the execution of the program, a variable can take different values at different times during the execution of the program.
- ❖ A variable name can be chosen by the programmer in a meaningful way so as to reflect data stored in it. For example: radius, square, total height and phone No. A variable name may consist of alphabets, digits, the underscore (_) and dollar (\$) characters.

❖ Following are the rules for naming variables:

- Variables must not begin with a digit.
- Upper case and lower case must be distinct this means that the variables Abc is not the same as abc or ABC.
- White space is not allowed in variable naming.
- Variable name should not be a keyword.
- Variable names can be of any length.

❖ Variable Declaration:

- In Java, all the variables must be declared before use. A variable declaration, in its simplest form, includes the name and the data type of variables.

• Declaration does following three things.

1. It tells variable name to the compiler
2. It specifies the data type of the data hold by variable.
3. The place of declaration in the program decided the scope of the variables.

- It is following form/syntax of a variables declaration:

```
Data_type Variable_Name;
```

Here, data_type is one of Java's data types and variable_Name is the name of the variable.

- To declare more than one variable of the specified type, you can use a comma-separated list as given below:

```
Data_type variable_Name1, variable_Name2, ...  
variable_NameN;
```

Example:

```
Int age; // Declares age
Int a, b, c; // Declares three ints, a, b, and c.
```

❖ Variable initialization:

- Variable initialization means assigning a value to variables. Initializing a variable means specifying an initial value to assign to it (i.e., before it is used at all).
- In Java, you can assign a value to variables in two ways:

1. **Static:** It means that the memory is determined for variables when the program starts. Variables can be assigned initial values at the time of declaration. Assignment operator (=) assigns the value of an expression to a variable.

Syntax: variable_name = value; OR data_type variable_name=value;

Example: IntialValue = 0;

```
A = b = c = 0;
```

```
Int a = 10, b = 10; // variable initialization
```

```
Byte B = 22; // initializes a byte type
variable B.
```

```
Double pi = 3.14159; // declares and assigns a
value of PI.
```

2. **Dynamic:** Dynamic means in java, you can declare variables anywhere in the program, because when the statement is executed the memory is assigned to them. Java allows its programmers to initialize a variable at run time also. Initializing a variable at run time is called dynamic initialization.

```
Class DynamicInit
```

```
{
    Public static void main (String args [ ])
    {
        Double a = 3.0, b = 4.0;
        // c is dynamically initialized
        Double c = Math.sqrt(a * a+ b * b);
        System.out.println ("C=" + c);
    }
}
Output: C = 5.0
```