Learning Consolidation

Creating Objects and Constructors

Learning Objectives

- Declare and initialize objects
- Define instance variables.
- Explore static blocks.

Object Declaration and Initialization

- Declaring an object creates a variable that will hold the reference to the object.
- When you declare an object, memory is not allocated to it.
- To allocate memory to the object, you need to instantiate or initialize the object by using the `new` keyword.
- The object can be declared first and initialized later

```
Employee sam;
sam = new Employee();
```

- It can also be declared and initialized at the same time

```
Employee sam = new Employee();
```

- Multiple objects can be created for the class as follows:

```
Employee anne = new Employee();
Employee belle = new Employee();
Employee martin = new Employee();
```

Instance Variables – Default Values

- Once an object is created using the new keyword, memory is allocated for the object's instance variables and methods.
- The instance variables are given some default values,
- Primitive types like `int, float, double, byte, short, long` will be initialized to `0`.
- `char` will be initialized to `'/u000'`
- `boolean` will be initialized to `false.`
- Non-primitive datatypes like String and arrays are initialized to `null`.

```java
public class Employee {
    String employeeName;
    int employeeCode;
    int age;
    String dob;
    double salary;

    void displayEmployeeDetails(){
        System.out.println("The details of an employee are");
        System.out.println(employeeName+"::"+employeeCode);
        System.out.println(age+"::"+dob+"::"+salary);
    }

    public static void main(String[] args) {
        Employee sam = new Employee();
    }

}
```

Assign Values to Instance Variables

- The objects are created but the instance variables have the default values only.
- Values can be assigned to the variables of the object by accessing the variable using the “.” dot operator.

```
<object-name>.<variable-name> = <value>
```

- Assign values to the variables of the object `'anne'`

```
Employee anne = new Employee();
anne.employeeCode = "E1209";
anne.employeeName = "Anne J";
anne.age = 42;
anne.dob = "09/08/2000";
anne.salary = 4000;
```

- Assign values to the variables of the object `'belle'`

```
Employee belle = new Employee();
belle.employeeCode = "E1045";
belle.employeeName = "Belle";
belle.age = 24;
belle.dob = "01/03/1998";
belle.salary = 1500;
```

Note that `anne` and `belle` have different values assigned to the variables.

`static` Block

- A block of code in Java is written within the curly braces.

```
{
// lines of code
}
```

- If a block is prefixed with the `static` keyword, it is called a static block.

```
static{
// lines of code
}
```

- The code within the `static` block is executed only once, when the class is loaded in memory for the first time.
- The `static` block is executed before the main method.
- Any operations to be done before the main method executes can done in the `static` block.