Day 4

- Servlet : "servlet-api.jar"
- JSP : "jsp-api.jar"
- Core Java : "rt.jar"
- rt.jar file contains following main packages:
    1. com
    2. java
    3. javax
    4. org
- "java" is a main package, which contains following 14 sub packages:
    1. applet
    2. io
    3. net
    4. security
    5. time
    6. awt
    7. lang
    8. nio
    9. sql
    10. util
    11. beans
    12. math
    13. rmi
    14. text
- "java.lang" packge contains all the fundamental classes of core java.
- In Java, If we want to use any type of local variable then it is mandatory to store value inside it.

```
public static void main(String[] args)
{
    int number;
    System.out.println(number); //Not OK
}
```

```
public static void main(String[] args)
{
    int number = 10;
    System.out.println(number); //OK
}
```

```
public static void main(String[] args)
{
```

```
    int number;
    number = 10;
    System.out.println(number); //OK
}
```

- Initialization is the process of storing value inside variable during declaration.

```
int num1;   //OK
int num1;   //NOT OK
```

```
int num1 = 10;   //OK:Initialization
int num1 = 20;   //NOT OK
```

```
int num1 = 10;   //OK:Initialization
num1 = 20;   //OK : Assignment
num1 = 30;   //OK : Assignment
```

- Assignment is the process of storing value inside variable after declaration.
- Process of converting value of variable of narrower type into wider type is called widening.
- In case of widening explicit typecasting is optional.

```
 int num1 = 10;
//double num2 = ( double )num1;   //OK : Widening
double num2 = num1;   //OK : Widening
```

- Process of converting value of variable of wider type into narrower type is called narrowing.
- In case of narrowing explicit type casting is mandatory.

```
double num1 = 10.5;
//int num2 = num1;    //Not OK
int num2 = (int)num1;    //OK: Narrowing
```

Command Line Argument

- In java, we can give input to the program from terminal/command prompt. Every value passed from terminal/command prompt is called argument.
- If we want to access any static member of the class then we should use class name and dot operator.
- If we want to access any non static member of the class then we should use object reference and dot operator.

UnBoxing

- It is the process of converting state of instance/object of non primitive type(reference type) into primitive type(valye type).

```
String str = "125";
int number = Integer.parseInt( str );//UnBoxing
```

- If string does not contain parsable numeric value then parseXXX() method throws NumberFormatException.

```
    String str = "abc";
    int number = Integer.parseInt( str );//NumberFormatException
```

Boxing

- It is the process of converting state of instance/object of primitive type(Value type) into non primitive type(reference type).

```
int num1 = 10;
String strNumber = String.valueOf(num1);  //Boxing
System.out.println("Number  :   "+strNumber);
```

- If we want to use any type(Interface/class/enum) in different package then
    1. either we should use F.Q. Type name
    2. or we should use import statement.
- "java.lang" package is by default imported in every ".java" file hence no need import it explicitly.

Console IO

- File is a permanent containter which is used to store data on HDD.
- Stream is an abstraction(object/instance) which is used to produce(write) and consume(read) information from source to destination.
- Console = Keyboard + Monitor
- Console Input => Keyboard
- Console Output => Monitor/Printer
- If we want to perform I/O operations with console then we should use streams associated with console.
    1. System.in : Standard Stream associated with keyboard
    2. System.out: Standard Stream associated with Monitor
    3. System.err:: Standard O/P Stream associated with Monitor
- Console is a class declared in java.io package.
- "public String readLine()" is a non static method of Console class.

Comments

- If we want to maintain documentation of source code then we should use comments.
- There are 3 types of comments:
    1. //Single line comment
    2. /* Multi line Comment */
    3. /** java doc comment */

Object Orineted Programming.

- Example
    - Date:(12,5,2020)
        - int day;
        - int month;
        - int year;
    - Color:
        - int red
        - int green
        - int blue
    - Point:
        - int xPosition
        - int yposition
    - Employee
        - String name
        - int empid;
        - float salary;
    - Account
        - String name;
        - int number;
        - String type;
        - float balance;
- If we want to group related data elements(Same & Different type) together then we define class.
- class is keyword in java.
- Variable declared inside class is called Field.
- If we want to store value inside field then it is nessary to create instance/object of a class.
- If we want to create instance of a class then it is nessary to use new operator.
- If we use new operator to allocate memory then space gets resereved on heap section. Everything on heap section is anonymous.