q-1Write the following a functional interface and implement it using lambda:

- (1) First number is greater than second number or not          Parameter (int ,int ) Return boolean
- (2) Increment the number by 1 and return incremented value   Parameter (int) Return int
- (3) Concatination of 2 string                                                      Parameter (String , String ) Return (String)
- (4) Convert a string to uppercase and return .                          Parameter (String) Return (String)

```java
package assignment5;
interface q1a
{
    boolean fun(int a,int b);
}
interface q1b
{
    int incre(int a);
}
interface  q1c
{
    String combo(String a,String b);
}
interface q1d
{
    String conv(String a);
}
public class assignment5 {
    public static void main(String[] args) {
        //(i)
     q1a ref=(int x,int y)->
     {
         if(x>y)
         {
             return true;
         }
         else
         {
             return false;
         }
     };
        boolean c= ref.fun(20,10);
        System.out.println(c);
        //(ii)
        q1b ref2=(int a)->
        {
            return ++a;
        };
        int b=ref2.incre(10);
        System.out.println(b);
        ///(iii)
        q1c ref3=(String x,String y)->
        {
            String z=x+y;
            return z;
        };
        String z=ref3.combo("Siddharth","Bhatia");
        System.out.println(""+z);
        //(iv)
        q1d ref4=(String x)->
        {
            String j=x.toUpperCase();
            return j;
```

```java
        };
        String j=ref4.conv("siddharth");
        System.out.println(""+j);
    }
}
```

q-2 Create a functional interface whose method takes 2 integers and return one integer.

```java
package assignment5;
interface q2
{
    int single(int a,int b);
}
public class assginment5q2 {
    public static void main(String[] args) {
            q2 ref=(int x,int y)->
            {
                return x;
            };
            int c=ref.single(10,20);
        System.out.println(""+c);
    }
}
```

q-3 Using (instance) Method reference create and apply add and subtract method and using (Static) Method reference create and apply multiplication method for the functional interface created

```java
package assignment5;
interface a
{
    int add(int a,int b);
}
interface b
{
    int sub(int a,int b);
}
interface c{
    int mul(int a, int b);
}
public class as5q3ii {
    int add2(int a,int b)
    {
        int c=a+b;
        return c;
    }
    int sub2(int a,int b)
    {
        int c=a-b;
        return c;
```

```
    }
    static int mul2(int a,int b)
    {
        int c=a*b;
        return c;
    }
    public static void main(String[] args) {
        a am=new as5q3ii()::add2;
        int p=am.add(10,20);
        b am2=new as5q3ii()::sub2;
        int q= am2.sub(30,10);
        c am3= as5q3ii::mul2;
        int r=am3.mul(10,20);
        System.out.println(""+p);
        System.out.println(""+q);
        System.out.println(""+r);
    }
}
```

```
/snap/intellij-idea-community/208/jbr/bin/java -javaagent:/snap/intellij-idea-community/208/lib/idea_rt.jar=41399:/snap/intellij-idea-community/208/bin -Dfile
.encoding=UTF-8 -classpath /home/siddharth/IdeaProjects/jvm_assignment/out/production/jvm_assignment assignment5.as5q3ii
30
20
200

Process finished with exit code 0
```

q-4 Create an Employee Class with instance variables (String) name, (Integer)age, (String)city and get the instance of the Class using constructor reference

```
package assignment5;
interface emp
{
    void disp(String name,int age,String city);
}
class Employee
{
    String name;
    int age;
    String city;
    Employee(String name,int age,String city)
    {
        this.name=name;
        this.age=age;
        this.city=city;
        System.out.println("Name is: "+name+" Age is: "+age+" City is: "+city);
    }
}
public class as5q4 {
    public static void main(String[] args) {
        emp ea=Employee :: new;
        ea.disp("Siddharth",23,"Delhi");
    }
}
```

```
/snap/intellij-idea-community/208/jbr/bin/java -javaagent:/snap/intellij-idea-community/208/lib/idea_rt.jar=39479:/snap/intellij-idea-community/208/bin -Dfile
.encoding=UTF-8 -classpath /home/siddharth/IdeaProjects/jvm_assignment/out/production/jvm_assignment assignment5.as5q4
Name is: Siddharth Age is: 23 City is: Delhi

Process finished with exit code 0
```

q-5 Implement following functional interfaces from java.util.function using lambdas:

- (1) Consumer

- (2) Supplier

- (3) Predicate

- (4) Function

```java
package assignment5;
import java.util.function.Consumer;
import java.util.function.Function;
import java.util.function.Predicate;
import java.util.function.Supplier;
public class as5q5 {
    public static void main(String[] args) {
        Consumer consumer=(e)->
        {
            System.out.println(e);
        };
        consumer.accept(10);
        Supplier supplier=()->
        {
                return 6;
        };
        System.out.println(supplier.get());
        Function<Integer,Integer> function=(e)->
        {
            return e+4;
        };
        System.out.println(function.apply(4));
        Predicate <Integer>predicate=(e)->{
            return e>2;
        };
        System.out.println(predicate.test(3));
    }
}
```

```
/snap/intellij-idea-community/208/jbr/bin/java -javaagent:/snap/intellij-idea-community/208/lib/idea_rt.jar=35117:/snap/intellij-idea-community/208/bin -Dfile
.encoding=UTF-8 -classpath /home/siddharth/IdeaProjects/jvm_assignment/out/production/jvm_assignment assignment5.as5q5
10
6
8
true

Process finished with exit code 0
```

q-6 Create and access default and static method of an interface.

```java
package assignment5;
interface fac
{
    default void fun()
    {
        System.out.println("Default method invoked");
    }
    static void stat()
    {
        System.out.println("Satic method invoked");
    }
}
public class as5q6 implements fac{
    public static void main(String[] args) {
        as5q6 abc=new as5q6();
        abc.fun();
        fac.stat();
```

```
        }
}
```

q-7 Override the default method of the interface.

```java
package assignment5;
interface ia1
{
    default void show()
    {
        System.out.println("Interface 1");
    }
}
interface ia2
{
    default void show()
    {
        System.out.println("Interface 2");
    }
}
public class as5q7 implements ia1,ia2{
    public void show()
    {
        ia1.super.show();
        ia2.super.show();
    }
    public static void main(String[] args) {
                as5q7 ob=new as5q7();
                ob.show();
    }
}
```

q-8 Implement multiple inheritance with default method inside  interface.

```java
package assignment5;
interface iam1
{
    default void show1()
    {
        System.out.println("Interface 1");
    }
}
interface iam2
{
    default void show2()
    {
        System.out.println("Interface 2");
    }
}
public class as5q8 implements iam1,iam2{
```

```
    public static void main(String[] args) {
        as5q8 obj=new as5q8();
        obj.show1();
        obj.show2();
    }
}
```

```
/snap/intellij-idea-community/208/jbr/bin/java -javaagent:/snap/intellij-idea-community/208/lib/idea_rt.jar=44557:/snap/intellij-idea-community/208
 .encoding=UTF-8 -classpath /home/siddharth/IdeaProjects/jvm_assignment/out/production/jvm_assignment assignment5.as5q8
Interface 1
Interface 2

Process finished with exit code 0
```

q-9 Collect all the even numbers from an integer list.
```
package assignment5;
import java.util.stream.Stream;
public class as5q9 {
    public static void main(String[] args) {
        Stream.of(1,2,3,4,5,6,7,8,9)
                .filter(e->e%2!=1)
                .forEach(System.out::println);
    }
}
```

```
/snap/intellij-idea-community/208/jbr/bin/java -javaagent:/snap/intellij-idea-community/208/lib/idea_rt.jar=35051:/snap/intellij-idea
 .encoding=UTF-8 -classpath /home/siddharth/IdeaProjects/jvm_assignment/out/production/jvm_assignment assignment5.as5q9
2
4
6
8

Process finished with exit code 0
```

q-10 Sum all the numbers greater than 5 in the integer list.
```
package assignment5;
import java.util.Arrays;
import java.util.List;
import java.util.stream.Stream;
public class as5q10 {
    public static void main(String[] args) {
       List<Integer> list =  Arrays.asList(1,2,3,4,5,6,7,8,9);
        int sum=list.stream()
         .filter(
                e-> {
                        return e > 5;
                }
         ).mapToInt(Integer::intValue).sum();
        System.out.println(""+sum);
    }
}
```

```
/snap/intellij-idea-community/208/jbr/bin/java -javaagent:/snap/intellij-idea-community/208/lib/idea_rt.jar=33005:/snap/intellij-i
 .encoding=UTF-8 -classpath /home/siddharth/IdeaProjects/jvm_assignment/out/production/jvm_assignment assignment5.as5q10
30

Process finished with exit code 0
```

q-11 Find average of the number inside integer list after doubling it.

```java
package assignment5;
import java.util.Arrays;
public class as5q11 {
    public static void main(String[] args) {
        System.out.println(
                Arrays.asList(1,2,3,4,5)
                .stream()
                .mapToDouble(e->e)
                .average()
        );
    }
}
```

```
/snap/intellij-idea-community/208/jbr/bin/java -javaagent:/snap/intellij-idea-community/208/lib/idea_rt.jar=37765:/snap/intellij-idea-commu
  .encoding=UTF-8 -classpath /home/siddharth/IdeaProjects/jvm_assignment/out/production/jvm_assignment assignment5.as5q11
OptionalDouble[3.0]

Process finished with exit code 0
```

q-12 Find the first even number in the integer list which is greater than 3.

```java
package assignment5;
import java.util.Arrays;
import java.util.List;
import java.util.Optional;
public class as5q12 {
    public static void main(String[] args) {
        List<Integer>ls= Arrays.asList(1,2,3,4,5,6,7,8,9,10);
        Optional<Integer>o=ls
                .stream()
                .filter(e->e%2==0)
                .filter(e->e>3)
                .findFirst();
        if(o.isPresent())
        {
            System.out.println(o.get());
        }
    }
}
```

```
/snap/intellij-idea-community/208/jbr/bin/java -javaagent:/snap/intellij-idea-community/208/lib/idea_rt.jar=45289:/snap/intellij-idea-community/208/bin -Dfile
  .encoding=UTF-8 -classpath /home/siddharth/IdeaProjects/jvm_assignment/out/production/jvm_assignment assignment5.as5q12
4

Process finished with exit code 0
```