

Generics

Assignment-5

1.

```
Employee.java
1 package com.chandan;
2
3 import java.util.*;
4
5
6 class Emp {
7
8     int id;
9     int salary;
10    String name;
11    public Emp(int id, int salary, String name) {
12        super();
13        this.id = id;
14        this.salary = salary;
15        this.name = name;
16    }
17    public void display()
18    {
19        System.out.print("ID= "+id);
20        System.out.print(", Salary= "+salary);
21        System.out.print(", Name= "+name);
22    }
23 }
24
25 public class Employee
26 {
27    public static void main(String[] args)
28    {
29        Emp emp1=new Emp(101,25000,"ABC");
30        Emp emp2=new Emp(102,20000,"XYZ");
31        HashSet<Emp> ab=new HashSet<Emp>();
32        ab.add(emp1);
33        ab.add(emp2);
34        Iterator<Emp> em=ab.iterator();
35        while(em.hasNext())
36        {
37            em.next().display();
38            System.out.println();
39        }
40    }
41 }
```

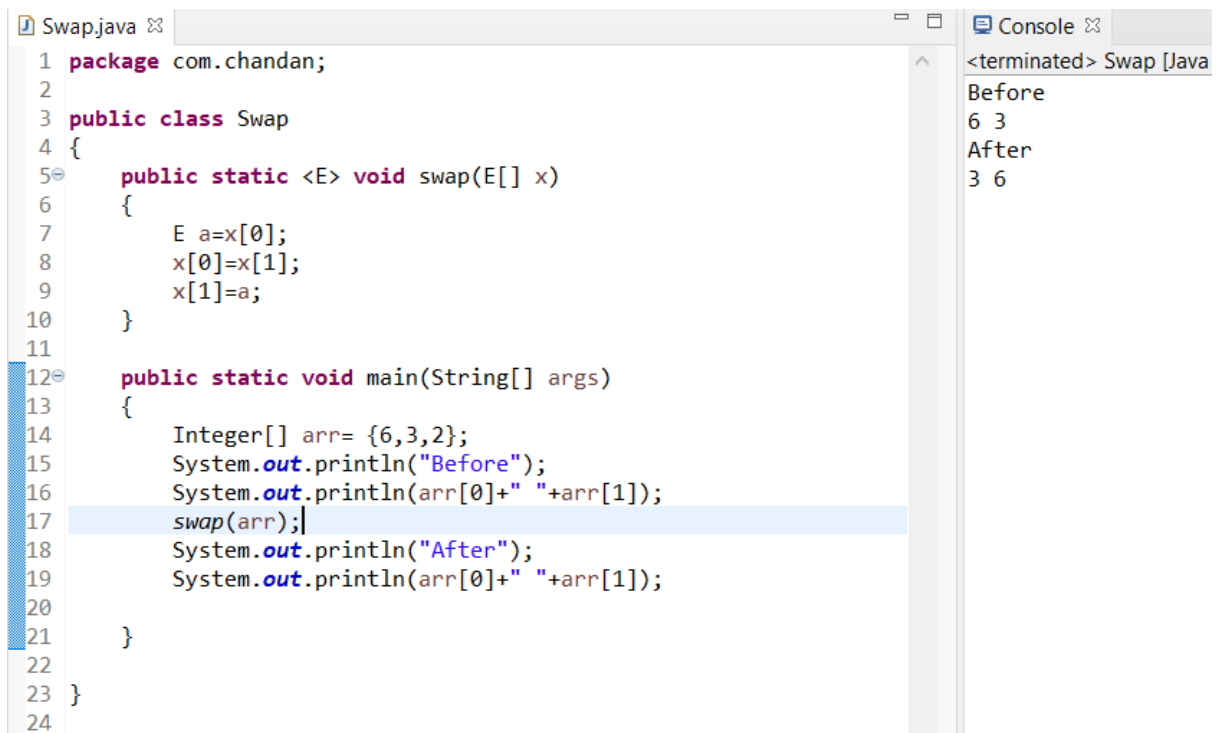
```
Console
<terminated> Employee [Java Application] C:\Pr
ID= 102, Salary= 20000, Name= XYZ
ID= 101, Salary= 25000, Name= ABC
```

2.

```
lamda.java
Generics/src/com/chandan/lamda.java
1 import java.util.*;
2
3 public class lamda
4 {
5    public static void main(String[] args)
6    {
7        HashMap<Integer,Double> ab=new HashMap<Integer,Double>();
8        ab.put(2, 587.222);
9        ab.put(3, 687.222);
10       ab.put(4, 7787.222);
11       ab.put(6, 5287.222);
12       ab.put(8, 5817.222);
13       ab.put(10, 5087.222);
14       ab.put(9, 58117.222);
15       ab.put(1, 580007.222);
16       ab.put(5, 5814207.222);
17       System.out.println(ab);
18    }
19 }
20
```

```
Console
<terminated> lamda [Java Application] C:\Program Files\Java\jdk-16.0.2\bin\javaw.exe (15-Nov-2021, 10:55:49 pm
{1=580007.222, 2=587.222, 3=687.222, 4=7787.222, 5=5814207.222, 6=5287.222, 8=5817.222, 9=58117.222, 10=5087.222, 2=587.222}
```

3.



The screenshot shows an IDE with a file named 'Swap.java'. The code defines a package 'com.chandan', a public class 'Swap', and a static method 'swap' that takes an array 'x' of type 'E' and swaps the first two elements. The 'main' method creates an integer array 'arr' with values {6, 3, 2}, prints 'Before' and the first two elements (6 3), calls 'swap(arr)', prints 'After' and the first two elements (3 6), and terminates.

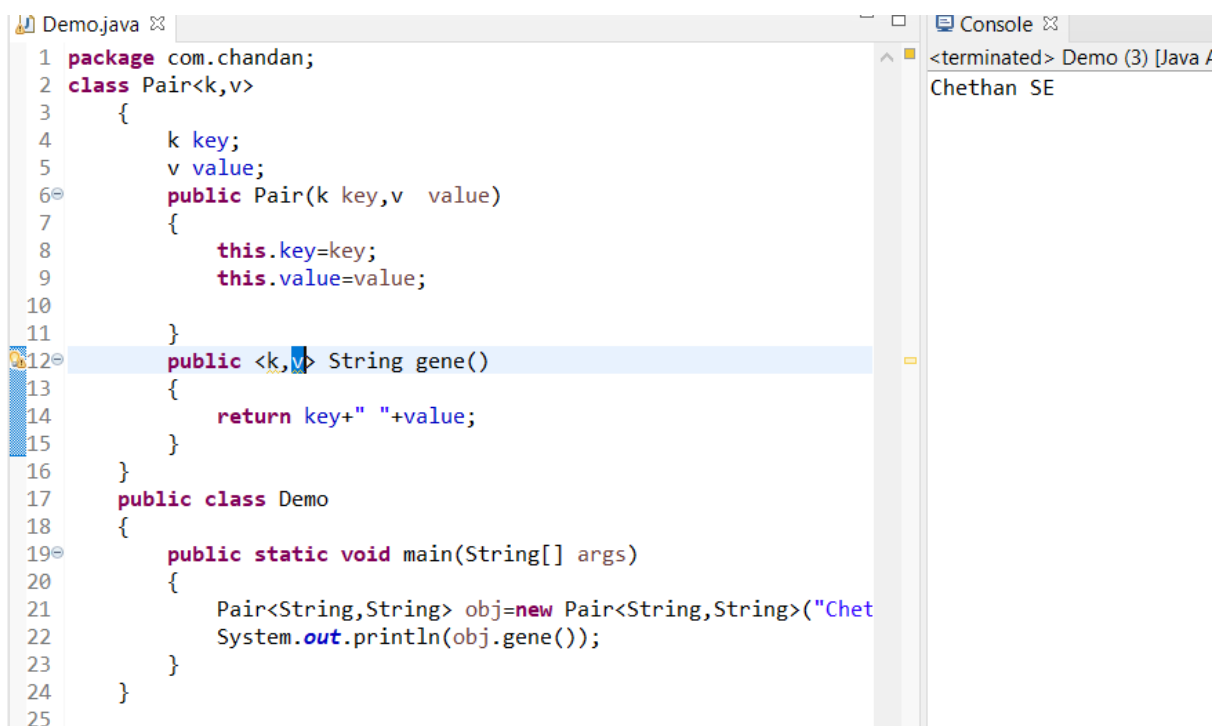
```
1 package com.chandan;
2
3 public class Swap
4 {
5     public static <E> void swap(E[] x)
6     {
7         E a=x[0];
8         x[0]=x[1];
9         x[1]=a;
10    }
11
12    public static void main(String[] args)
13    {
14        Integer[] arr= {6,3,2};
15        System.out.println("Before");
16        System.out.println(arr[0]+" "+arr[1]);
17        swap(arr);
18        System.out.println("After");
19        System.out.println(arr[0]+" "+arr[1]);
20    }
21 }
22
23
24
```

Console output:

```
<terminated> Swap [Java
Before
6 3
After
3 6
```

4.

(a)



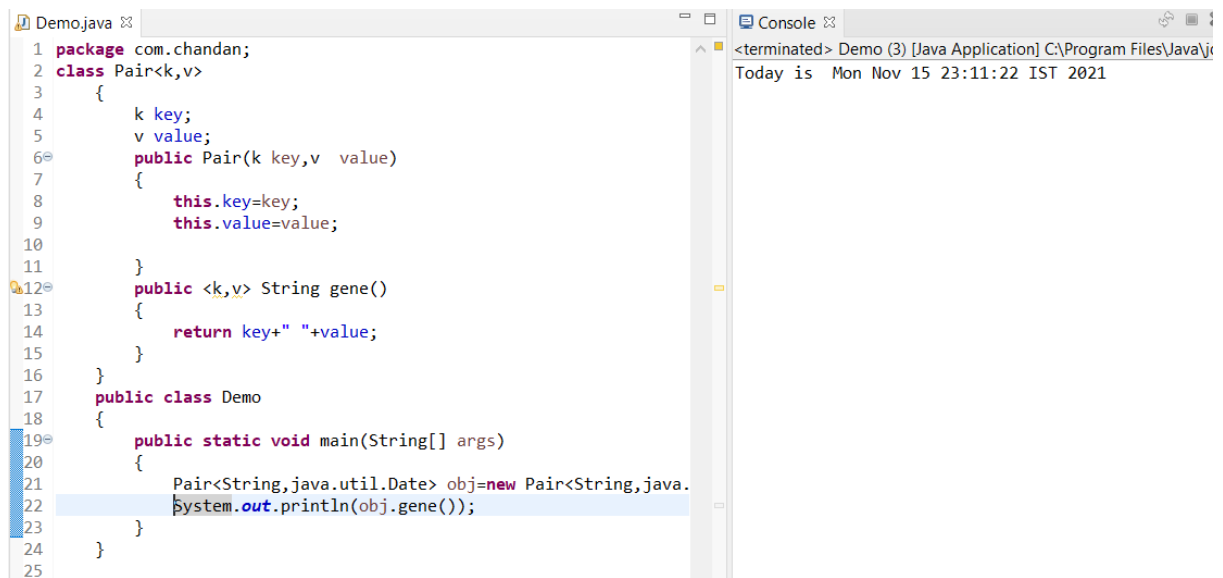
The screenshot shows an IDE with a file named 'Demo.java'. It defines a generic class 'Pair' with parameters 'k' and 'v', containing fields 'key' and 'value', a constructor, and a 'gene()' method that returns the key and value separated by a space. A 'Demo' class contains a 'main' method that creates a 'Pair' object with 'Chetan' as the key and 'SE' as the value, and prints the result of 'gene()'.

```
1 package com.chandan;
2 class Pair<k,v>
3 {
4     k key;
5     v value;
6     public Pair(k key,v value)
7     {
8         this.key=key;
9         this.value=value;
10    }
11
12    public <k,v> String gene()
13    {
14        return key+" "+value;
15    }
16 }
17 public class Demo
18 {
19     public static void main(String[] args)
20     {
21         Pair<String,String> obj=new Pair<String,String>("Chetan", "SE");
22         System.out.println(obj.gene());
23     }
24 }
25
```

Console output:

```
<terminated> Demo (3) [Java /
Chetan SE
```

4 (b)



The screenshot shows an IDE with two panels. The left panel displays a Java file named 'Demo.java' with the following code:

```
1 package com.chandan;
2 class Pair<k,v>
3 {
4     k key;
5     v value;
6     public Pair(k key,v value)
7     {
8         this.key=key;
9         this.value=value;
10    }
11
12    public <k,v> String gene()
13    {
14        return key+" "+value;
15    }
16 }
17 public class Demo
18 {
19     public static void main(String[] args)
20     {
21         Pair<String,java.util.Date> obj=new Pair<String,java.
22         System.out.println(obj.gene());
23     }
24 }
25
```

The right panel shows the console output for the application 'Demo (3) [Java Application]'. The output is:

```
<terminated> Demo (3) [Java Application] C:\Program Files\Java\j
Today is Mon Nov 15 23:11:22 IST 2021
```