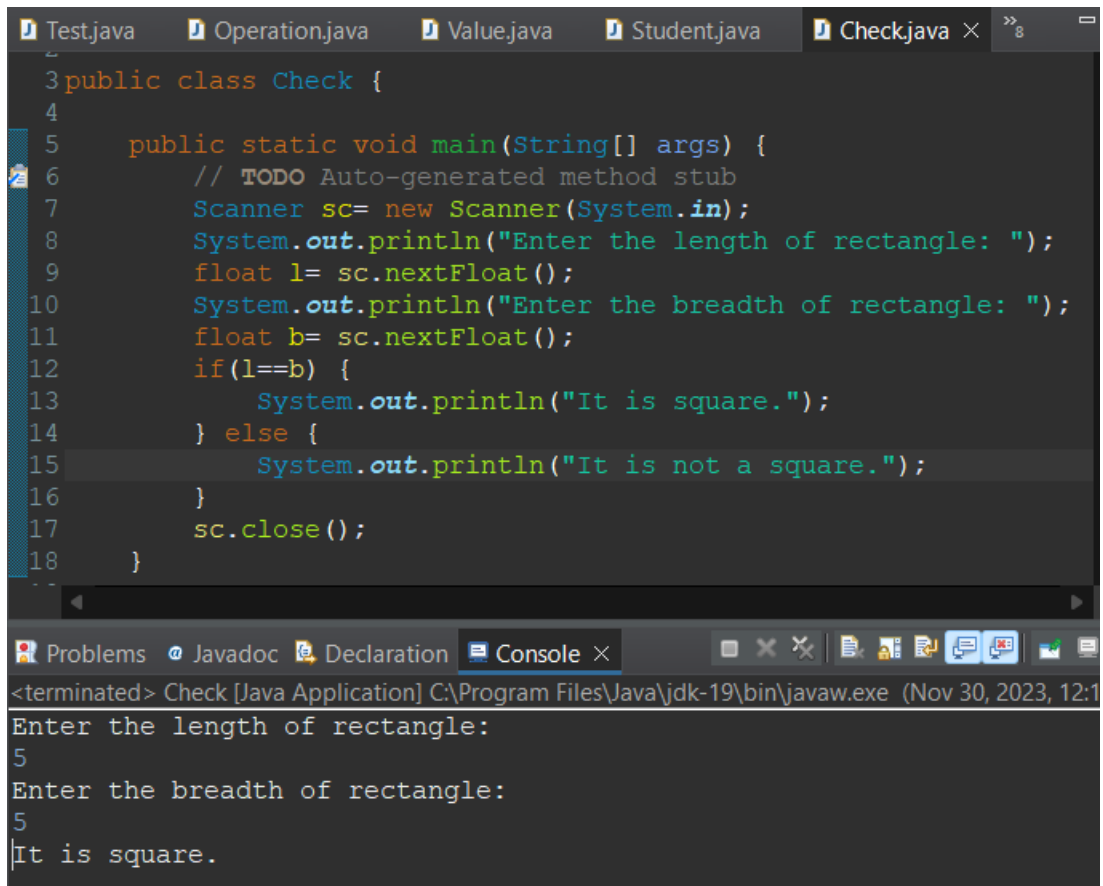Object Oriented Design and Programming
Workshop2

Go through the questions below and answer the questions:

1. Taking length and breadth of a rectangle from user and check if it is square or not.

```
Test.java    Operation.java    Value.java    Student.java    Check.java ×    >>8

 3 public class Check {
 4
 5     public static void main(String[] args) {
 6         // TODO Auto-generated method stub
 7         Scanner sc= new Scanner(System.in);
 8         System.out.println("Enter the length of rectangle: ");
 9         float l= sc.nextFloat();
10         System.out.println("Enter the breadth of rectangle: ");
11         float b= sc.nextFloat();
12         if(l==b) {
13             System.out.println("It is square.");
14         } else {
15             System.out.println("It is not a square.");
16         }
17         sc.close();
18     }
```

```
Problems  @ Javadoc  Declaration  Console ×

<terminated> Check [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe  (Nov 30, 2023, 12:1
Enter the length of rectangle:
5
Enter the breadth of rectangle:
5
It is square.
```

2. A college has following rules for grading system:
   a. 40 to 50 - C
   b. 50 to 60 - C+
   c. 60 to 70 - B
   d. 70 to 80 - B+
   e. 80 to 90 - A
   f. Above 90 - A+
   Ask user to enter marks and print the corresponding grade using if-else-if statement.

```java
1 import java.util.Scanner;
2
3 public class College {
4
5     public static void main(String[] args) {
6         // TODO Auto-generated method stub
7         Scanner sc= new Scanner(System.in);
8         System.out.println("Enter your marks: ");
9         int m= sc.nextInt();
10        if(m>=90) {
11            System.out.println("You scored A+.");
12        } else if(m>=80) {
13            System.out.println("You scored A.");
14        } else if(m>=70) {
15            System.out.println("You scored B+.");
16        } else if(m>=60) {
17            System.out.println("You scored B.");
18        } else if(m>=50) {
19            System.out.println("You scored C+.");
20        } else if(m>=40) {
21            System.out.println("You scored C.");
22        }
23    }
24
25 }
```

Problems  @ Javadoc  Declaration  Console ×

<terminated> College [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe  (Nov 3
Enter your marks:
50
You scored C+.

3.  Determine oldest and youngest among the people taking the using input.

```java
 3 public class Among {
 4
 5      public static void main(String[] args) {
 6              // TODO Auto-generated method stub
 7              Scanner sc= new Scanner(System.in);
 8              System.out.print("Enter the age of first person: ");
 9              int a1= sc.nextInt();
10              System.out.println("Enter the age of second person: ");
11              int a2= sc.nextInt();
12              System.out.println("Enter the age of third person: ");
13              int a3= sc.nextInt();
14              if(a1>a2 && a1>a3) {
15                  System.out.println("First person is the oldest.");
16              } else if(a2>a1 && a2>a3) {
17                  System.out.println("Second person is the oldest.");
18              } else {
19                  System.out.println("Third person is the oldest.");
20              }
21
22              if(a1<a2 && a1<a3) {
23                  System.out.println("First person is the youngest.");
24              } else if(a2<a1 && a2<a3) {
25                  System.out.println("Second person is the youngest.");
26              } else {
27                  System.out.println("Third person is the youngest.");
28              }
29              sc.close();
30      }
```

Problems  @ Javadoc  Declaration  Console ×

<terminated> Among [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe  (Nov 30, 2023, 12:29:45 PM –
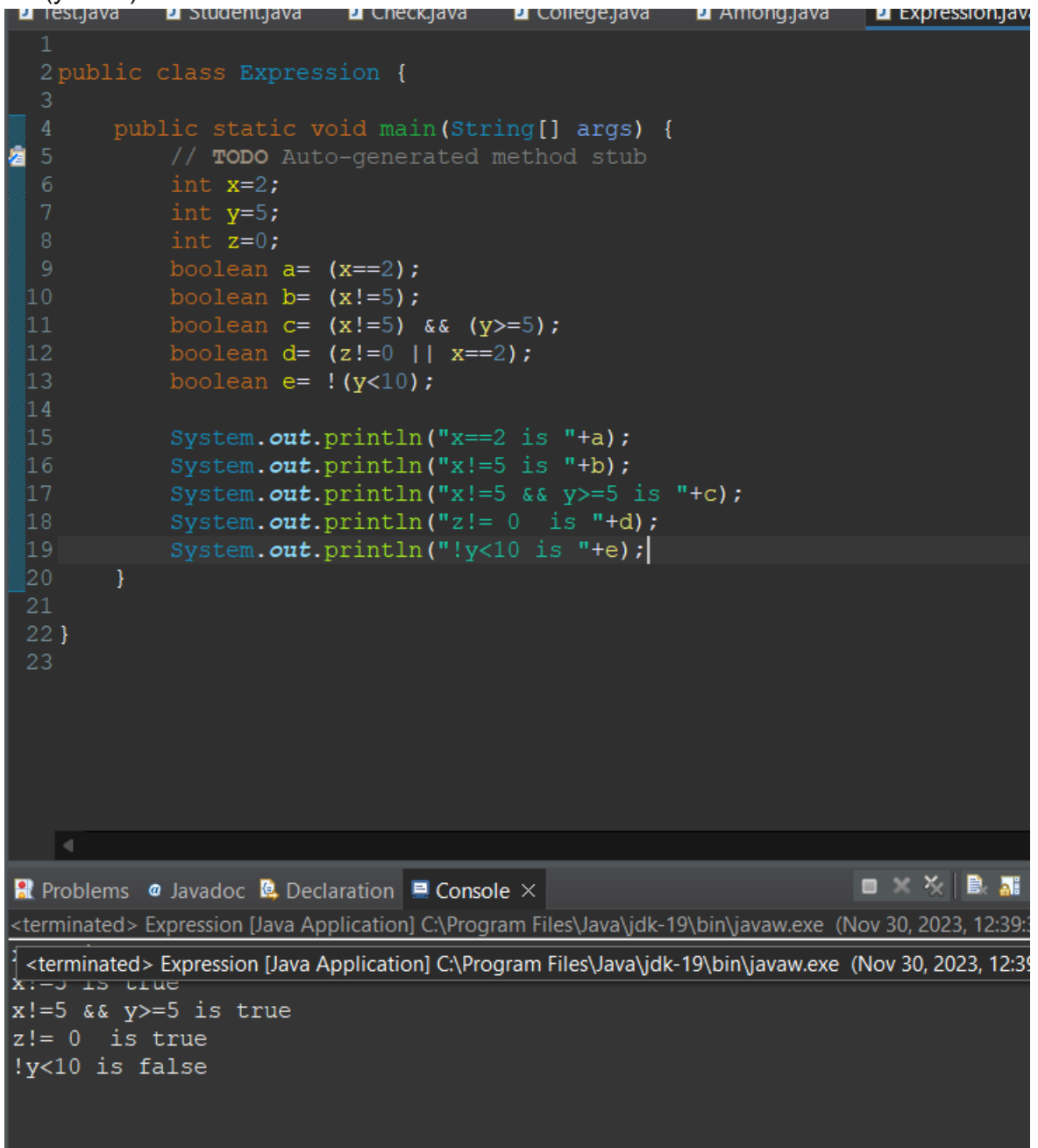
```
Enter the age of first person: 50
Enter the age of second person:
40
Enter the age of third person:
15
First person is the oldest.
Third person is the youngest.
```

4. If
   x = 2
   y = 5
   z = 0
   then find values of the following expressions:
   a. x == 2
   b. x != 5

c. x != 5 && y >= 5
d. z != 0 || x == 2
e. !(y < 10)
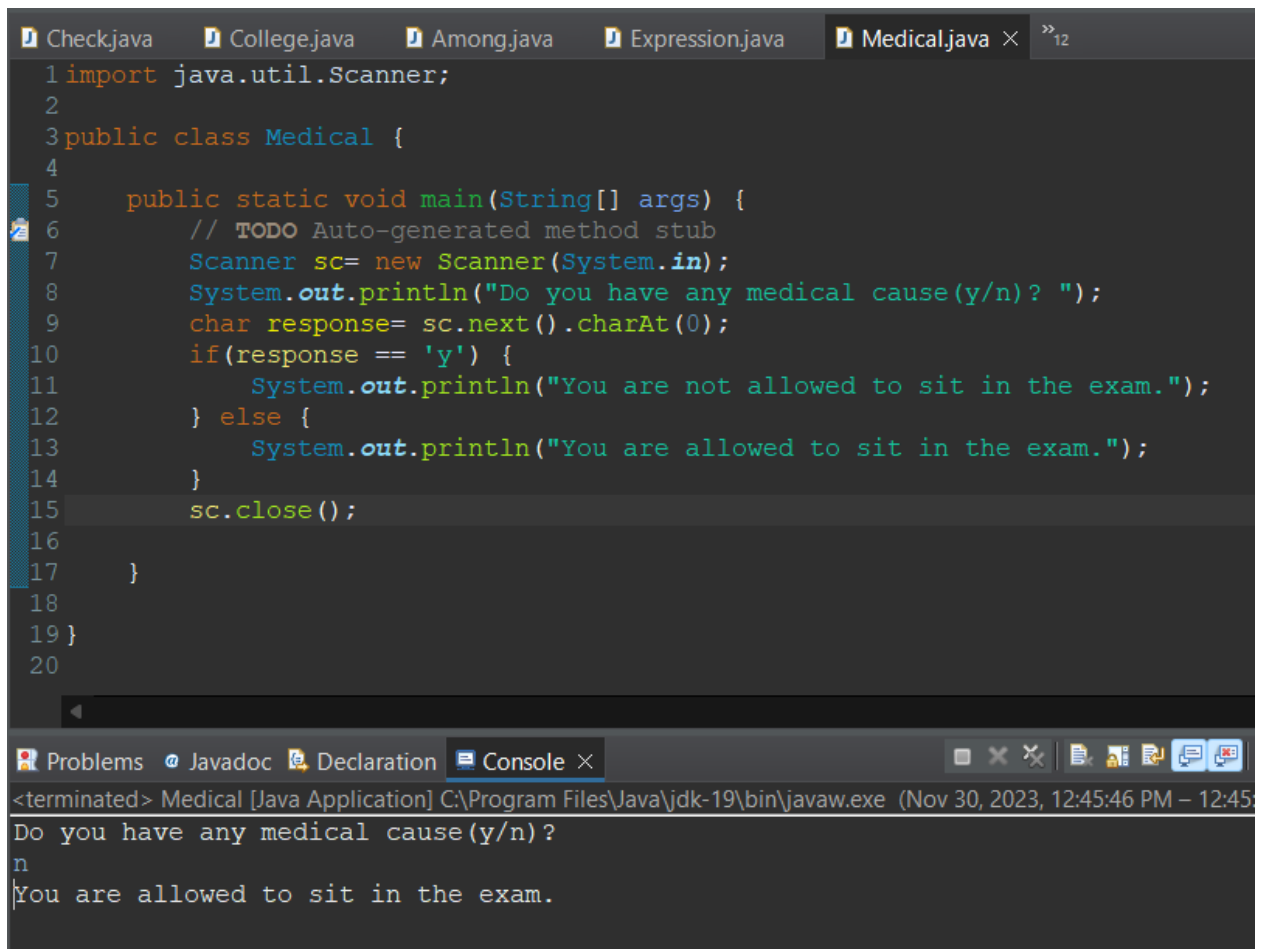
```java
 1
 2 public class Expression {
 3
 4     public static void main(String[] args) {
 5         // TODO Auto-generated method stub
 6         int x=2;
 7         int y=5;
 8         int z=0;
 9         boolean a= (x==2);
10         boolean b= (x!=5);
11         boolean c= (x!=5) && (y>=5);
12         boolean d= (z!=0 || x==2);
13         boolean e= !(y<10);
14
15         System.out.println("x==2 is "+a);
16         System.out.println("x!=5 is "+b);
17         System.out.println("x!=5 && y>=5 is "+c);
18         System.out.println("z!= 0  is "+d);
19         System.out.println("!y<10 is "+e);
20     }
21
22 }
23
```

```
x!=5 is true
x!=5 && y>=5 is true
z!= 0  is true
!y<10 is false
```

5. Ask student if he/she has medical cause or not ( 'y or 'n' ). if ('y') print you are not allowed to sit in the exam  and if('n'') print you can sit in the exam.

```java
1 import java.util.Scanner;
2
3 public class Medical {
4
5     public static void main(String[] args) {
6         // TODO Auto-generated method stub
7         Scanner sc= new Scanner(System.in);
8         System.out.println("Do you have any medical cause(y/n)? ");
9         char response= sc.next().charAt(0);
10        if(response == 'y') {
11            System.out.println("You are not allowed to sit in the exam.");
12        } else {
13            System.out.println("You are allowed to sit in the exam.");
14        }
15        sc.close();
16
17    }
18
19 }
20
```

Problems   @ Javadoc   Declaration   Console ×
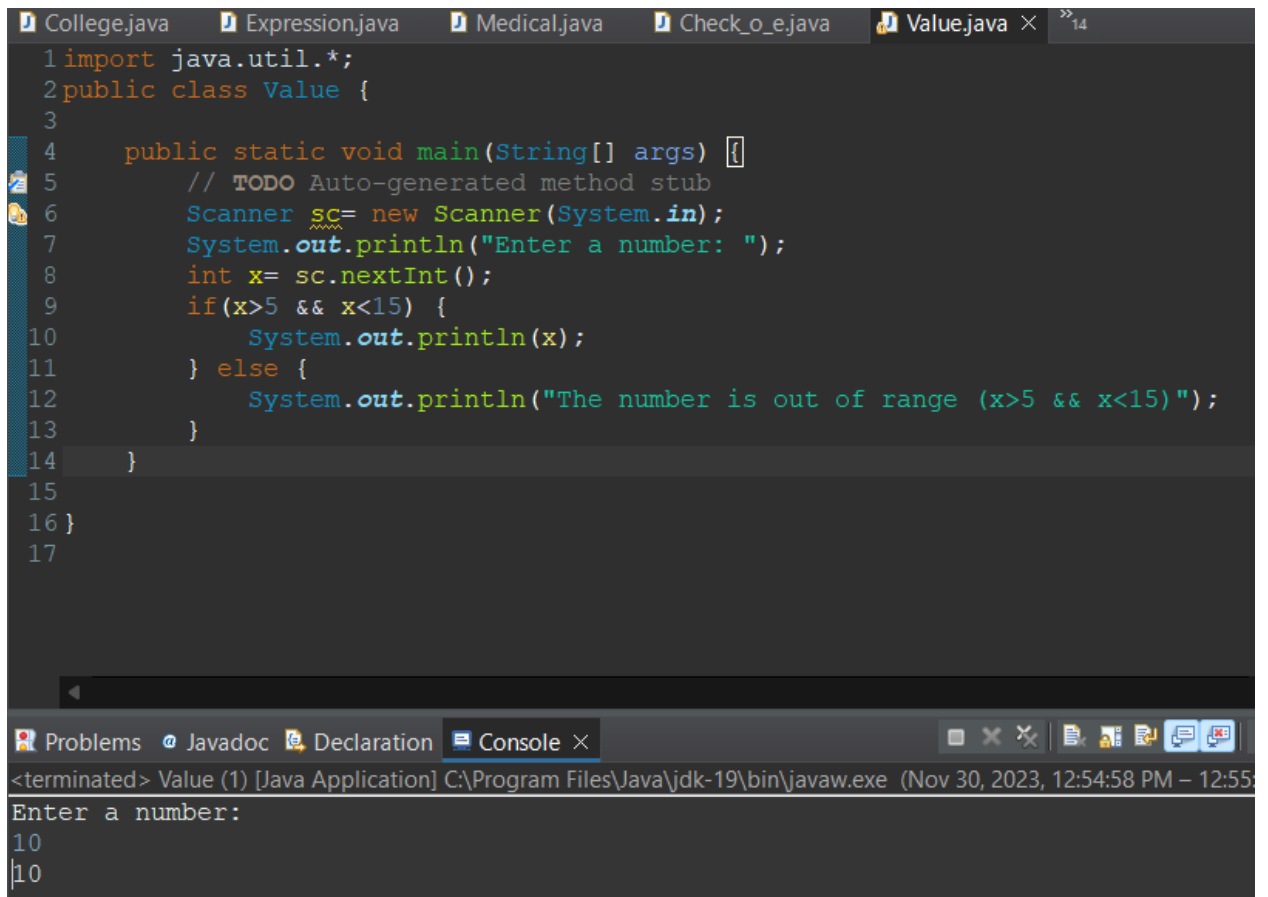
&lt;terminated&gt; Medical [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe (Nov 30, 2023, 12:45:46 PM – 12:45:

```
Do you have any medical cause(y/n)?
n
You are allowed to sit in the exam.
```

6. Write a program to check the odd and even numbers using user input.

```java
import java.util.Scanner;
public class Check_o_e {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner sc= new Scanner(System.in);
        System.out.println("Enter a number: ");
        int a= sc.nextInt();

        if(a%2==0) {
            System.out.println("It is even number.");
        } else {
            System.out.println("It is odd number.");
        }
        sc.close();
    }

}
```

Problems  @ Javadoc  Declaration  Console ×

<terminated> Check_o_e [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe  (Nov 30, 2023, 12:5

```
Enter a number:
8
It is even number.
```

7. Write a program to print the value of x ,if and only if the value of x is x>5 and less x<15 taking user input.

```java
College.java    Expression.java    Medical.java    Check_o_e.java    Value.java ×    »14
 1 import java.util.*;
 2 public class Value {
 3
 4     public static void main(String[] args) {
 5         // TODO Auto-generated method stub
 6         Scanner sc= new Scanner(System.in);
 7         System.out.println("Enter a number: ");
 8         int x= sc.nextInt();
 9         if(x>5 && x<15) {
10             System.out.println(x);
11         } else {
12             System.out.println("The number is out of range (x>5 && x<15)");
13         }
14     }
15
16 }
17
```

```
Problems  @ Javadoc  Declaration  Console ×                        ■ × ※ | ▣ ▤ ▨ ▣ ▣
<terminated> Value (1) [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe  (Nov 30, 2023, 12:54:58 PM – 12:55:
Enter a number:
10
10
```

8. Assuming the value: x=20,y=15,z=10.Complete the code below and observe the result.

if (x > y)

{
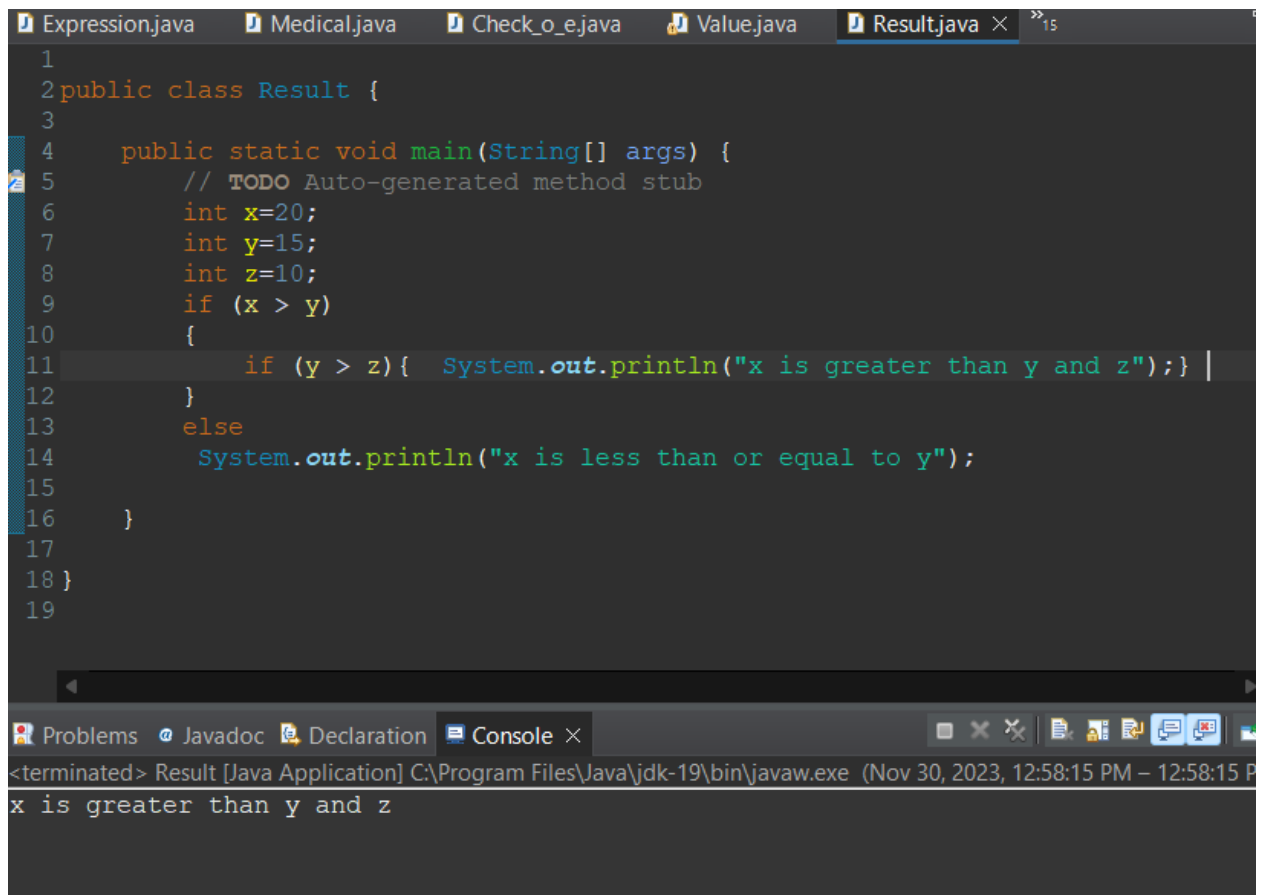
    if (y > z){  System.out.println("x is greater than y and z");}    // statement1.

}

else

 System.out.println("x is less than or equal to y"); // statement2.

```
 1
 2 public class Result {
 3
 4      public static void main(String[] args) {
 5          // TODO Auto-generated method stub
 6          int x=20;
 7          int y=15;
 8          int z=10;
 9          if (x > y)
10          {
11              if (y > z){  System.out.println("x is greater than y and z");} |
12          }
13          else
14           System.out.println("x is less than or equal to y");
15
16      }
17
18 }
19
```

Problems  @ Javadoc  Declaration  Console ×

&lt;terminated&gt; Result [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe  (Nov 30, 2023, 12:58:15 PM – 12:58:15 P
```
x is greater than y and z
```

9. A college has following rules for grading system:
   a. grade -A+    print ("Excellent !")
   b. grade -A     print ("Outstanding !")
   c. grade -B+    print ("Good !")
   d. grade -B     print ("Can do better !")
   e. grade -C+    print ("Just Passed !")
   f.  grade -C      print ("You Failed !")
                    print ("Invalid grade!") for default case
   Ask user to enter grade  and print the corresponding grade using switch
   statement

```
Medical.java    Check_o_e.java    Value.java    Result.java    Grade.java ×

4
5        public static void main(String[] args) {
6            // TODO Auto-generated method stub
7            Scanner sc= new Scanner(System.in);
8            System.out.println("Enter your grade: ");
9            String G= sc.next();
10           switch(G){
11               case "A+":
12                   System.out.println("Excellent !");
13                   break;
14               case "A":
15                   System.out.println("Outstanding !");
16                   break;
17               case "B+":
18                   System.out.println("Good !");
19                   break;
20               case "B":
21                   System.out.println("Can do better !");
22                   break;
23               case "C+":
24                   System.out.println("Just Passed !");
25                   break;
26               case "C":
27                   System.out.println("You Failed !");
28                   break;
29               default:
30                   System.out.println("Invalid grade !");
31
32       }
33
34       }
35 }
```

```
Problems  @ Javadoc  Declaration  Console ×
<terminated> Grade [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe  (Nov 30, 202:
Enter your grade:
A
Outstanding !
```

10. Run the code below and observe how the break statement works.

```
class Student {
    public static void main(String[] args) {
        int roll_no = 12;
        switch (roll_no) {
            case 1:
                System.out.println("Your roll number is 10");
                break;
            case 2:
```

```
        System.out.println("Your roll number is 12");
        break;
    default:
        System.out.println("Your roll number is greater than 12");
    }
  }
}
```

```
J Medical.java    J Check_o_e.java    J Value.java    J Result.java    J Grade.java    J Student.java ✕    16
 1
 2 public class Student {
 3
 4     public static void main(String[] args) {
 5         // TODO Auto-generated method stub
 6         int roll_no = 12;
 7         switch (roll_no) {
 8             case 1:
 9                 System.out.println("Your roll number is 10");
10                 break;
11             case 2:
12                 System.out.println("Your roll number is 12");
13                 break;
14             default:
15                 System.out.println("Your roll number is greater than 12");
16         }
17     }
18 }
19
```
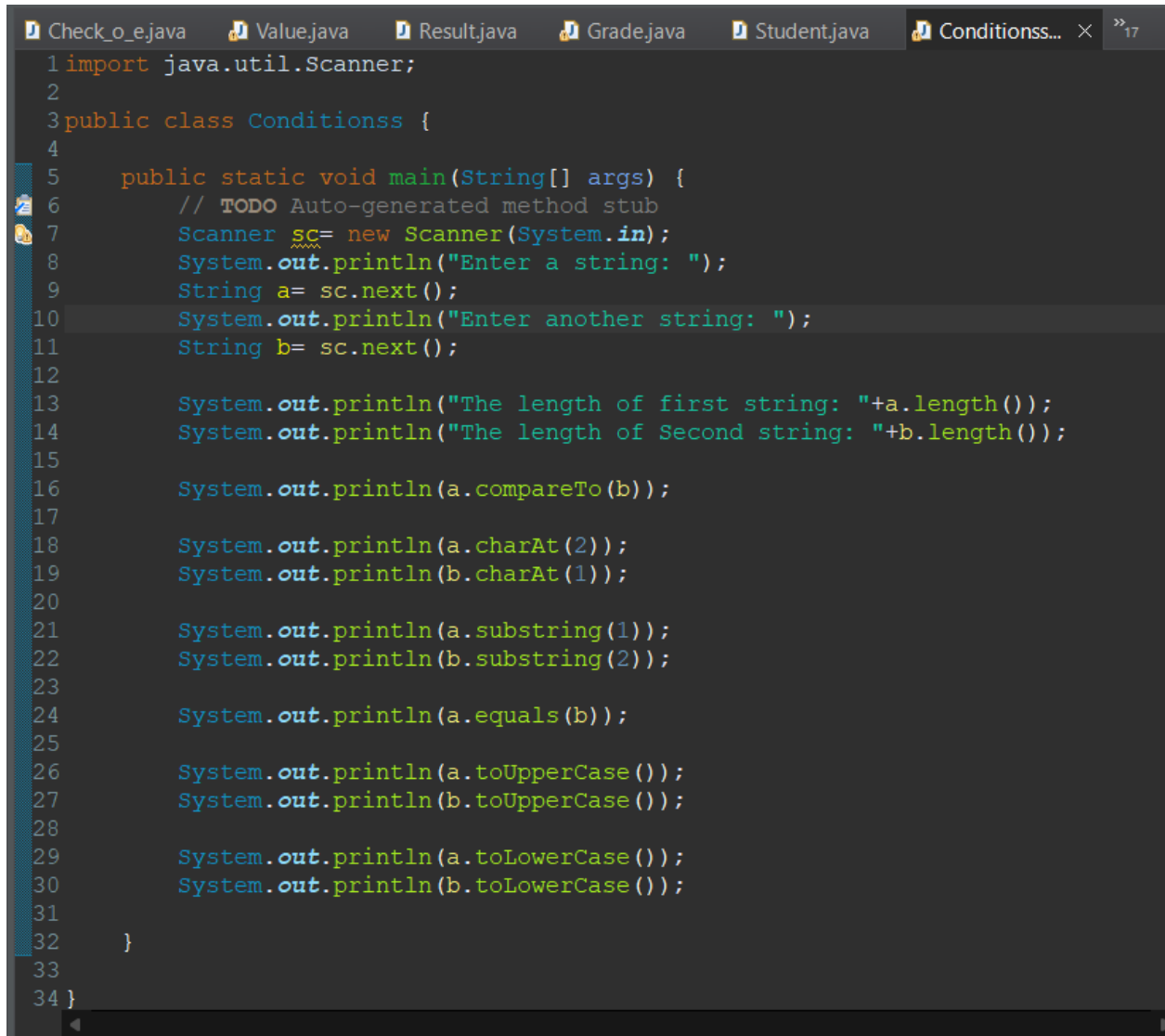
```
 Problems  @ Javadoc  Declaration  ■ Console ✕                              ■ ✕ ✕ | B ⌧ R ⊟ 🗙
<terminated> Student (1) [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe  (Nov 30, 2023, 1:12:47 PM – 1:12:
Your roll number is greater than 12
```

11. Write a program to take two string user input and perform the following string methods and observe the result

    a) length()

    b) compareTo()

    c) charAt()

    d) substring()

    e) Equals

    f) toUpperCase()

g) toLowerCase()

```java
import java.util.Scanner;

public class Conditionss {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner sc= new Scanner(System.in);
        System.out.println("Enter a string: ");
        String a= sc.next();
        System.out.println("Enter another string: ");
        String b= sc.next();

        System.out.println("The length of first string: "+a.length());
        System.out.println("The length of Second string: "+b.length());

        System.out.println(a.compareTo(b));

        System.out.println(a.charAt(2));
        System.out.println(b.charAt(1));

        System.out.println(a.substring(1));
        System.out.println(b.substring(2));

        System.out.println(a.equals(b));

        System.out.println(a.toUpperCase());
        System.out.println(b.toUpperCase());

        System.out.println(a.toLowerCase());
        System.out.println(b.toLowerCase());

    }

}
```

```
<terminated> Conditionss [Java Application] C:\Program
Enter a string:
merina
Enter another string:
shrestha
The length of first string: 6
The length of Second string: 8
-6
r
h
erina
restha
false
MERINA
SHRESTHA
merina
shrestha
```

12. Take the integer user input and convert it to the long and float using widening
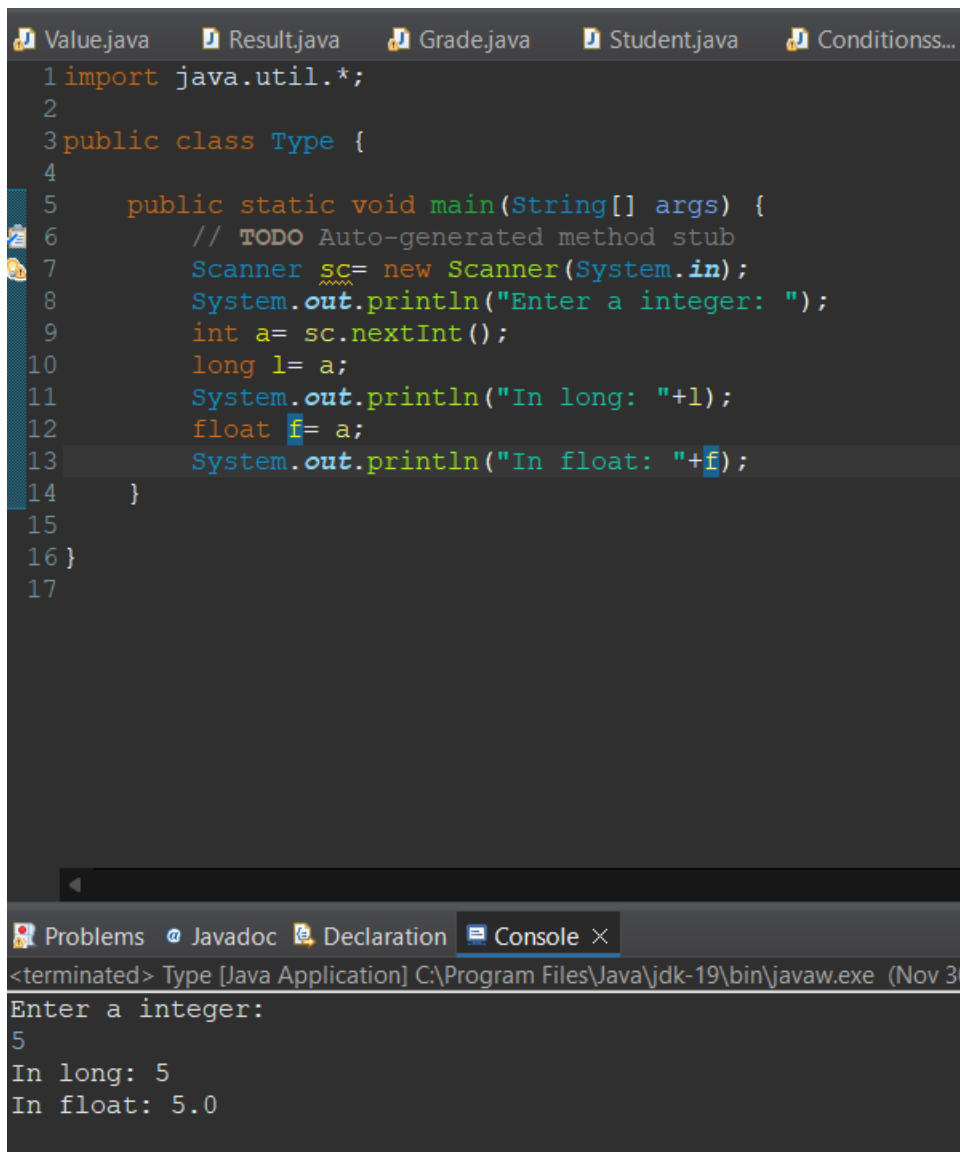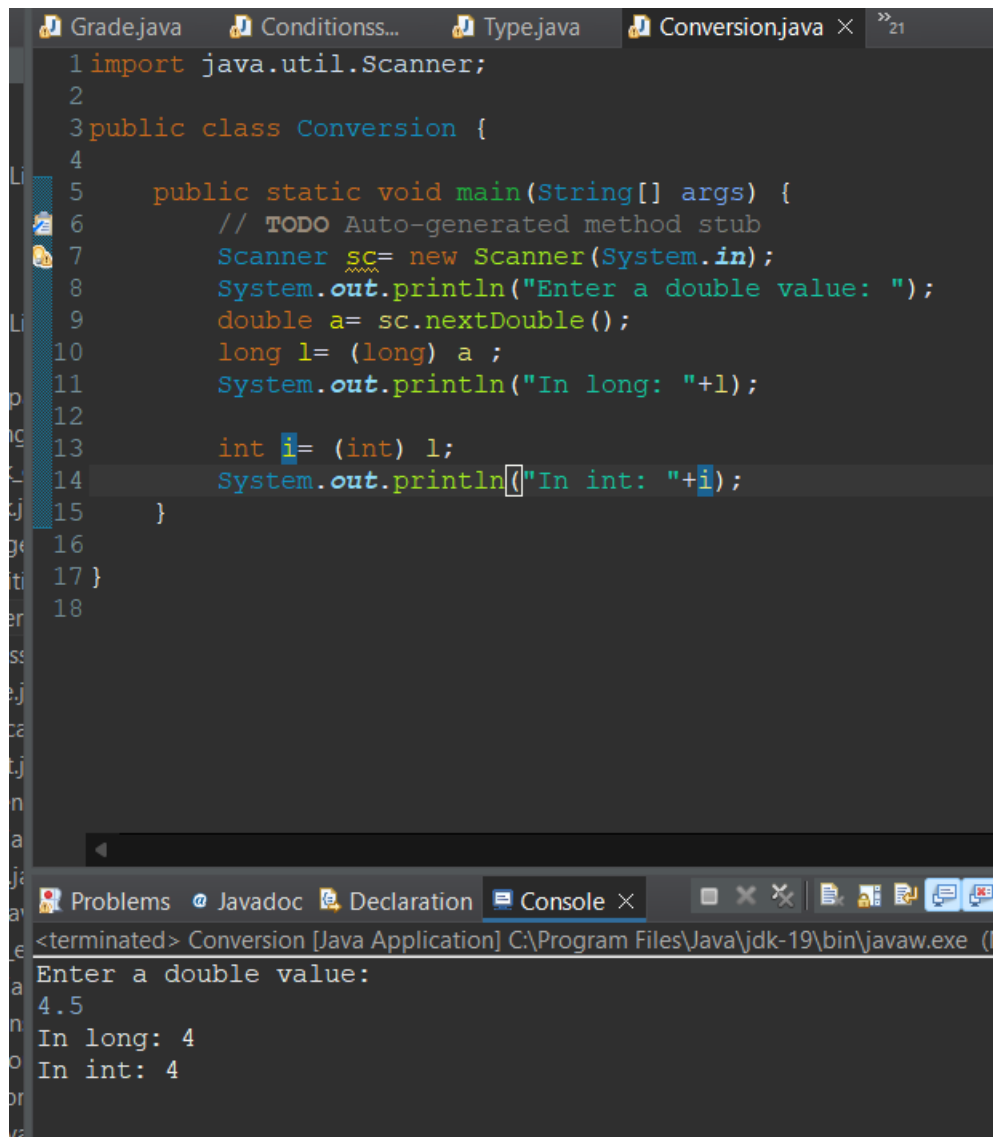    type casting.

```java
1 import java.util.*;
2
3 public class Type {
4
5     public static void main(String[] args) {
6             // TODO Auto-generated method stub
7             Scanner sc= new Scanner(System.in);
8             System.out.println("Enter a integer: ");
9             int a= sc.nextInt();
10            long l= a;
11            System.out.println("In long: "+l);
12            float f= a;
13            System.out.println("In float: "+f);
14     }
15 }
16 }
17
```

Problems  @ Javadoc  Declaration  Console ×

<terminated> Type [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe  (Nov 3(

```
Enter a integer:
5
In long: 5
In float: 5.0
```

13.Take the double user input and convert it to long and convert the long data type into int data type using narrowing type casting.

```java
1 import java.util.Scanner;
2
3 public class Conversion {
4
5     public static void main(String[] args) {
6         // TODO Auto-generated method stub
7         Scanner sc= new Scanner(System.in);
8         System.out.println("Enter a double value: ");
9         double a= sc.nextDouble();
10        long l= (long) a ;
11        System.out.println("In long: "+l);
12
13        int i= (int) l;
14        System.out.println("In int: "+i);
15    }
16
17 }
18
```

Problems  @ Javadoc  ⓑ Declaration  📮 Console ×

<terminated> Conversion [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe (

```
Enter a double value:
4.5
In long: 4
In int: 4
```

14.Perform float to int type casting and vice-versa using user input.

```java
1 import java.util.*;
2
3 public class Tyypee {
4
5     public static void main(String[] args) {
6         // TODO Auto-generated method stub
7         Scanner sc= new Scanner(System.in);
8         System.out.println("Enter a float value: ");
9         float a= sc.nextFloat();
10
11         int i= (int) a ;
12         System.out.println("In int: "+i);
13
14         float f= (float) i;
15         System.out.println("In flaot: "+f);
16     }
17
18 }
19
```

Problems   @ Javadoc   Declaration   Console ×

&lt;terminated&gt; Tyypee [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe (Nov

```
Enter a float value:
8.6
In int: 8
In flaot: 8.0
```