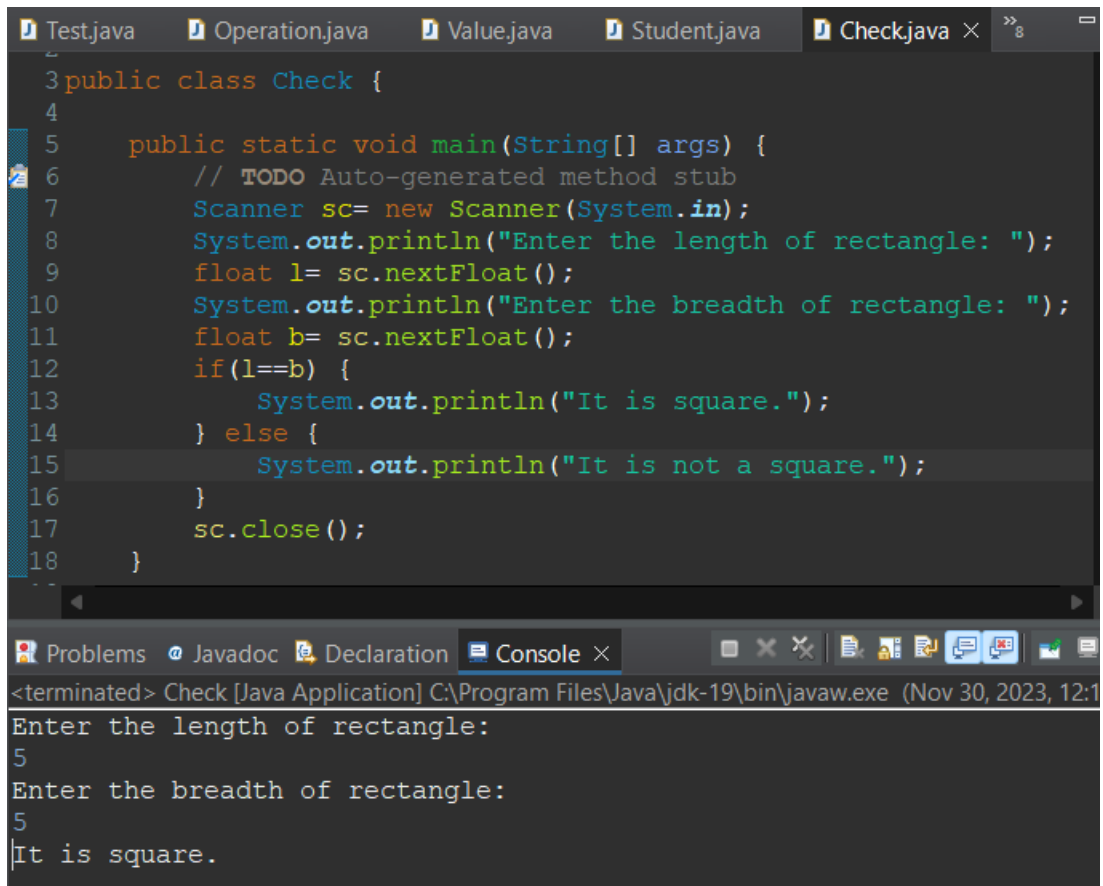


Object Oriented Design and Programming Workshop2

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 x  >>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    }
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2
```

The screenshot shows an IDE with four tabs: Test.java, Student.java, Check.java, and College.java. The College.java tab is active, displaying the following code:

```
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 }
```

Below the code editor, the 'Console' tab is active, showing the program's execution:

```
<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.

```
Test.java Student.java Check.java College.java Among.java X Expression.java
2
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 X

<terminated> Among [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe (Nov 30, 2023, 12:29:45 PM -

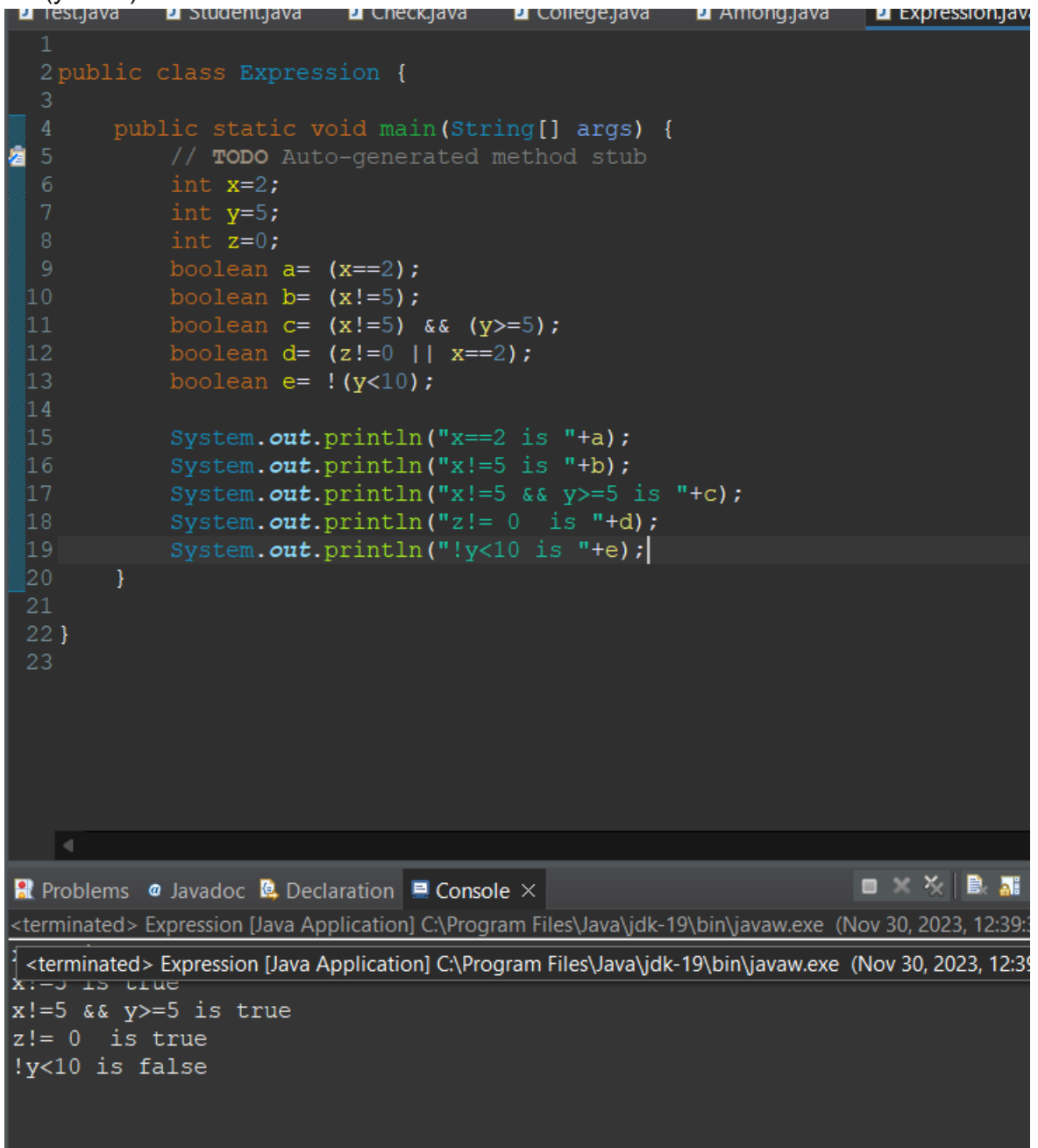
Enter the age of first person: 50
Enter the age of second person:
40
Enter the age of third person:
15
First person is the oldest.
Third person is the youngest.

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

c. $x \neq 5 \ \&\& \ y \geq 5$

d. $z \neq 0 \ || \ x == 2$

e. $!(y < 10)$

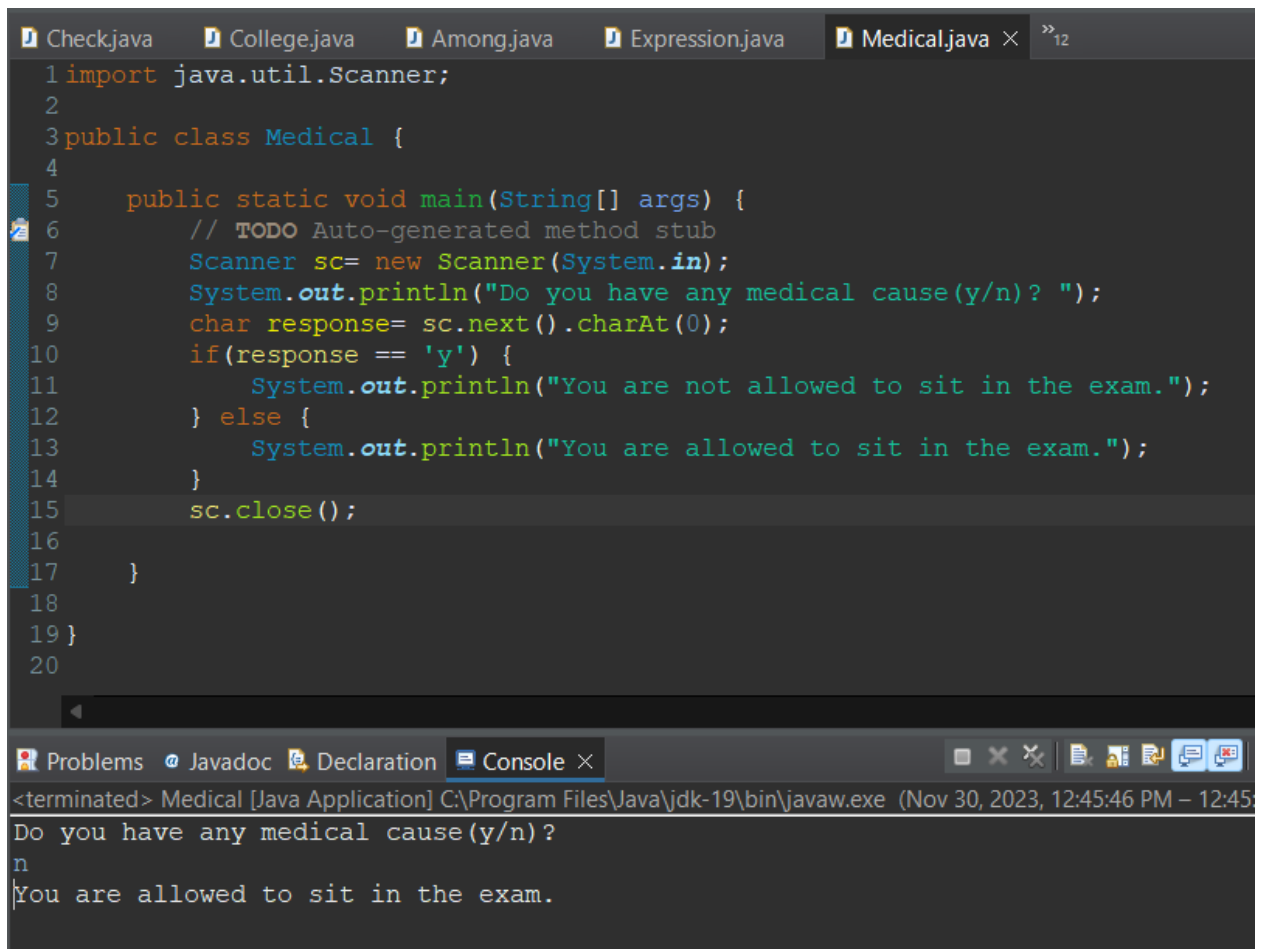


The screenshot shows a Java IDE with the file `Expression.java` open. The code defines a `public class Expression` with a `main` method. Inside `main`, variables `x`, `y`, and `z` are initialized to 2, 5, and 0 respectively. Then, boolean variables `a`, `b`, `c`, `d`, and `e` are assigned the values of the expressions `(x==2)`, `(x!=5)`, `(x!=5) && (y>=5)`, `(z!=0 || x==2)`, and `!(y<10)` respectively. Finally, each expression is printed to the console with a label. The console output at the bottom shows the results: `x==2 is true`, `x!=5 is false`, `x!=5 && y>=5 is false`, `z!=0 || x==2 is true`, and `!y<10 is false`.

```
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
```

<terminated> Expression [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe (Nov 30, 2023, 12:39:30)
<terminated> Expression [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe (Nov 30, 2023, 12:39:30)
x==2 is true
x!=5 is false
x!=5 && y>=5 is false
z!=0 || x==2 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.



The screenshot shows an IDE with several tabs: Checkjava, College.java, Among.java, Expression.java, and Medical.java. The Medical.java tab is active, displaying the following code:

```
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
```

Below the code editor, the Console tab is active, showing the program's execution:

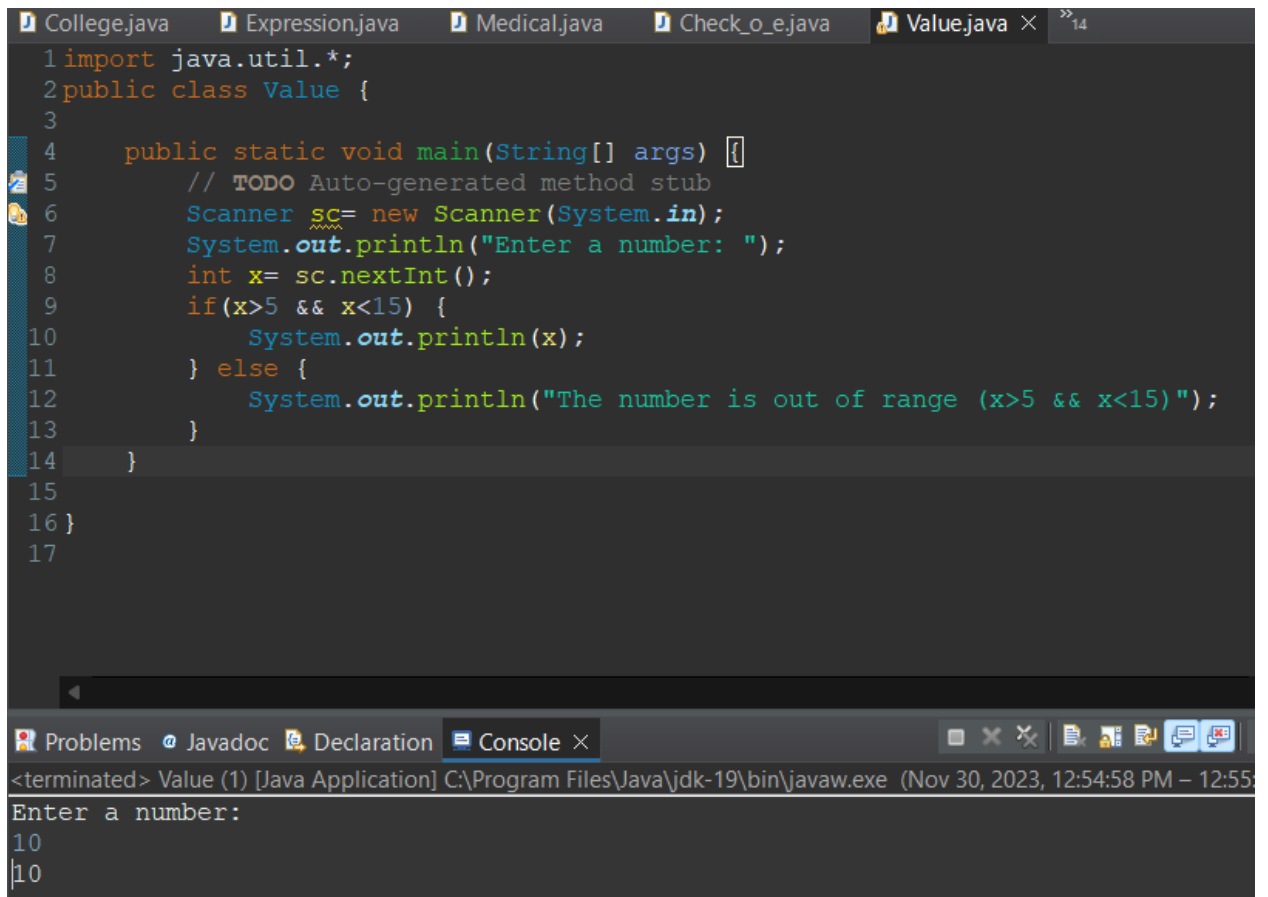
```
<terminated> Medical [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe (Nov 30, 2023, 12:45:46 PM - 12:45:
Do you have any medical cause(y/n)?
n
You are allowed to sit in the exam.
```

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

```
1 import java.util.Scanner;
2 public class Check_o_e {
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 a= sc.nextInt();
9
10        if(a%2==0) {
11            System.out.println("It is even number.");
12        } else {
13            System.out.println("It is odd number.");
14        }
15        sc.close();
16    }
17
18 }
19
```

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



```
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
```

<terminated> Value (1) [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe (Nov 30, 2023, 12:54:58 PM – 12:55:10 PM)

Enter a number:

10

10

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

if ($x > y$)

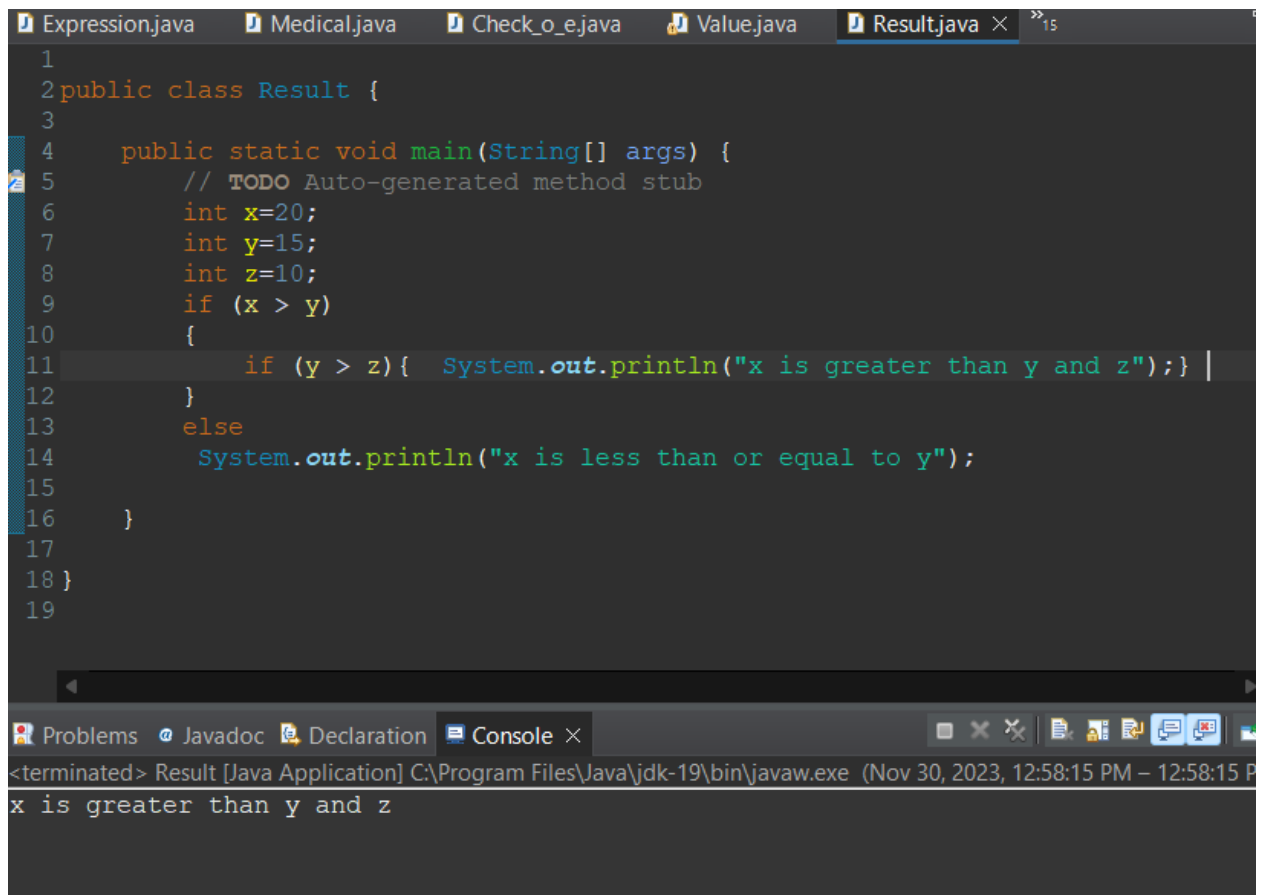
{

 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
```

<terminated> 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


```
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, 2021)

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");
    }
}
}

```

The screenshot shows an IDE with several files open: Medical.java, Check_o_e.java, Value.java, Result.java, Grade.java, and Student.java. The Student.java file is active and contains the following code:

```

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

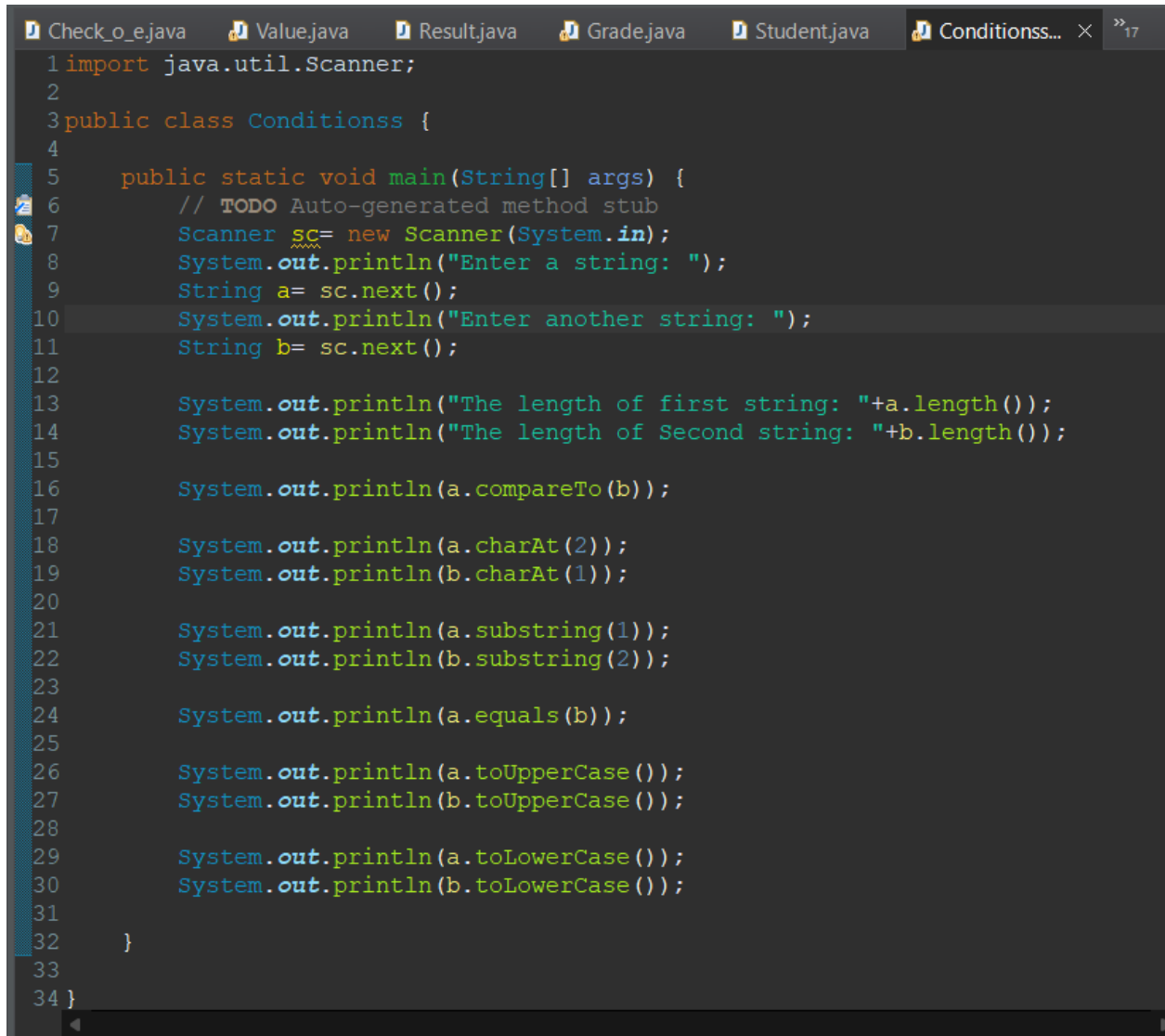
```

The console window at the bottom shows the output: "Your roll number is greater than 12". The console title is "Console X" and the text below it reads: "<terminated> Student (1) [Java Application] C:\Program Files\Java\jdk-19\bin\javaw.exe (Nov 30, 2023, 1:12:47 PM - 1:12:47 PM)".

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()

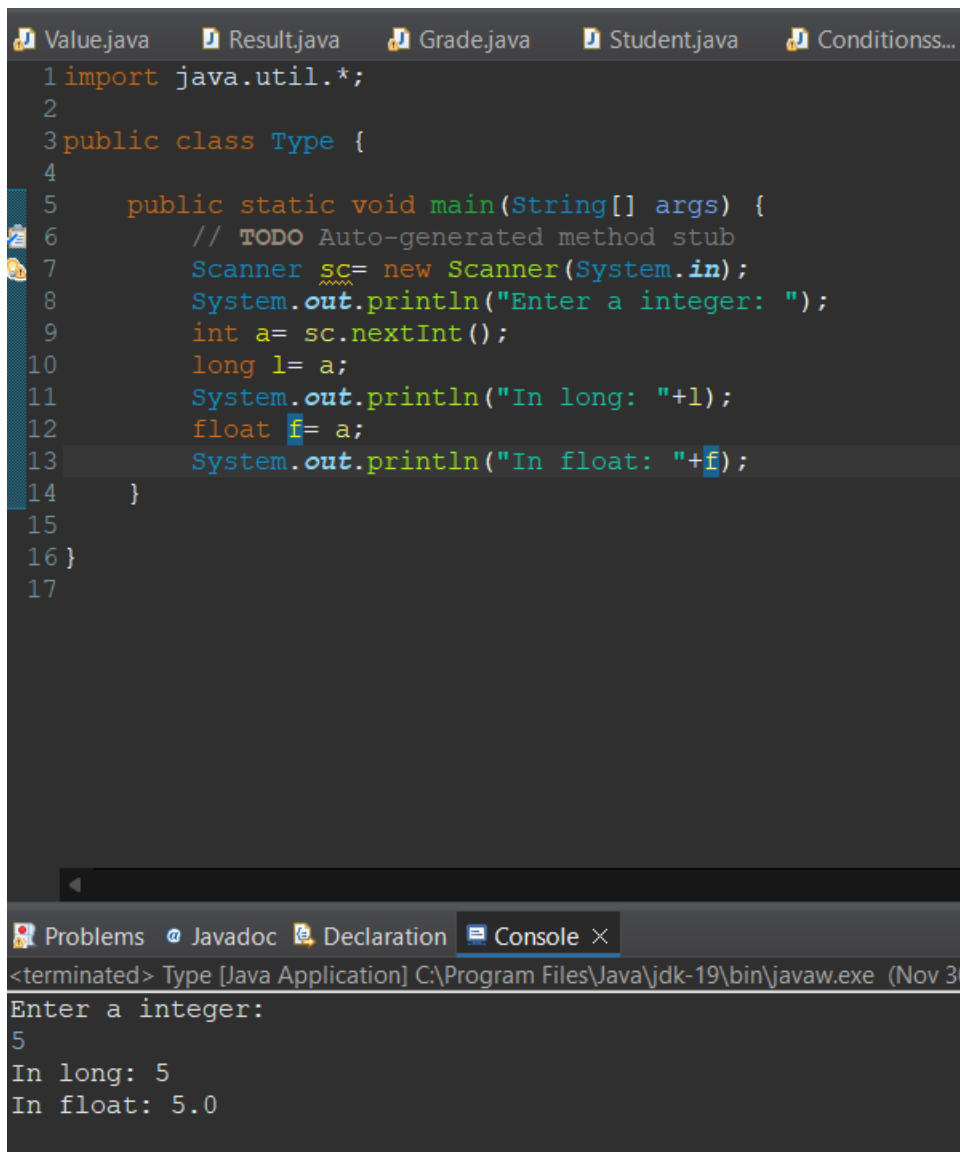
g) toLowerCase()



```
1 import java.util.Scanner;
2
3 public class Conditionss {
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 string: ");
9         String a= sc.next();
10        System.out.println("Enter another string: ");
11        String b= sc.next();
12
13        System.out.println("The length of first string: "+a.length());
14        System.out.println("The length of Second string: "+b.length());
15
16        System.out.println(a.compareTo(b));
17
18        System.out.println(a.charAt(2));
19        System.out.println(b.charAt(1));
20
21        System.out.println(a.substring(1));
22        System.out.println(b.substring(2));
23
24        System.out.println(a.equals(b));
25
26        System.out.println(a.toUpperCase());
27        System.out.println(b.toUpperCase());
28
29        System.out.println(a.toLowerCase());
30        System.out.println(b.toLowerCase());
31
32    }
33
34 }
```

```
<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.



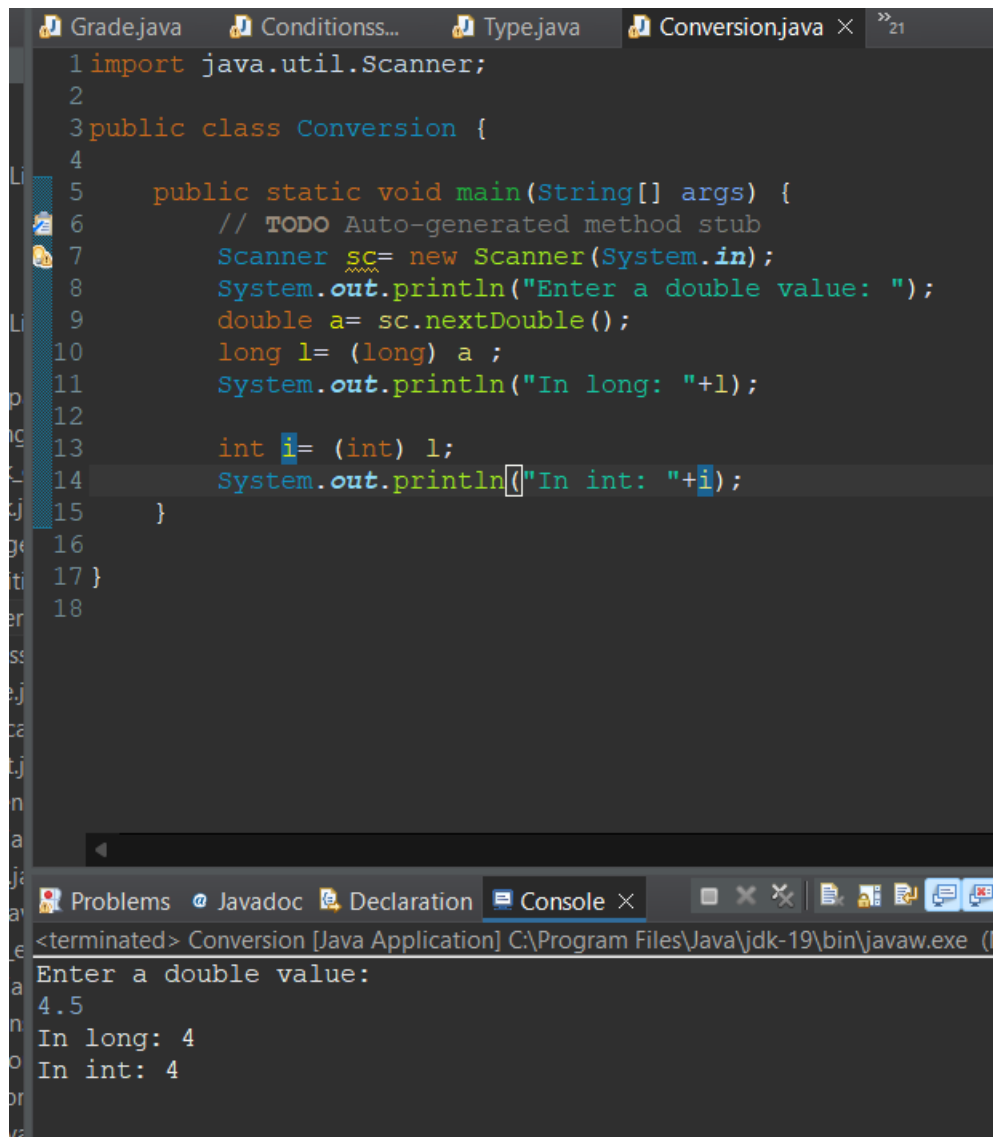
The screenshot shows an IDE with a dark theme. The top toolbar contains icons for Value.java, Result.java, Grade.java, Student.java, and Conditions... The main editor displays the following Java code:

```
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
```

Below the editor is a console window with tabs for Problems, Javadoc, Declaration, and Console. The Console tab is active, showing the following output:

```
<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.



The screenshot displays an IDE with a Java file named `Conversion.java`. The code implements a `main` method that uses a `Scanner` to read a double value from the user, casts it to a `long`, and then to an `int`, printing the results at each stage. The console output shows the user entering `4.5`, which is then cast to `4` for both the `long` and `int` types.

```
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
```

Console Output:

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

```
Conditions... Type.java Conversion.java Tyypee.java X »22
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 X

<terminated> 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