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.

```java
// Taking length and breadth of a rectangle from user and check if it is square or not.
Scanner sc = new Scanner(System.in);
System.out.print("Enter the length. : ");
int l = sc.nextInt();
System.out.print("Enter the breath. : ");
int b = sc.nextInt();
String result = (l == b) ? ("SQUARE") : ("NOT SQUARE.");
System.out.println(result);
sc.close();
```

```
PROBLEMS 1  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

sers\SUMIT SHAH\AppData\Local\Temp\vscodesws_6c777\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
Enter the length. : 10
Enter the breath. : 20
NOT SQUARE.
PS C:\Users\SUMIT SHAH>
```

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.

```
        Scanner sc = new Scanner(System.in);
        System.out.print(s:"Enter the marks : ");
        int marks = sc.nextInt();

        if (marks >= 40 && marks < 50) {
            System.out.println(x:"C");
        } else if (marks >= 50 && marks < 60) {
            System.out.println(x:"C+");
        } else if (marks >= 60 &&  marks < 70) {
            System.out.println(x:"B");
        } else if (marks >= 70 &&  marks < 80) {
            System.out.println(x:"B+");
        } else if (marks >= 80 &&  marks < 90) {
            System.out.println(x:"A");
        } else if (marks >= 90 &&  marks <= 100) {
            System.out.println(x:"A+");
        } else {
            System.out.println(x:"INVALID MARKS.");
        }
```

```
PROBLEMS 1  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\SUMIT SHAH>  & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\U
sers\SUMIT SHAH\AppData\Local\Temp\vscodesws_8c098\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
Enter the marks : 90
A+
PS C:\Users\SUMIT SHAH>
```

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

```
        // Determine oldest and youngest among the people taking the using input.
        Scanner sc = new Scanner(System.in);
        System.out.print(s:"Enter the age of first person.");
        int a = sc.nextInt();
        System.out.print(s:"Enter the age of Second person.");
        int b = sc.nextInt();
        String result = (a > b) ? ("First person is Oldest and Second is youngest") : ("Scond is oldest and first is y
        System.out.println(result);
        sc.close();
```

```
PROBLEMS 1  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

sers\SUMIT SHAH\AppData\Local\Temp\vscodesws_8c098\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
Enter the age of first person.20
Enter the age of Second person.18
First person is Oldest and Second is youngest
PS C:\Users\SUMIT SHAH>
```

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
int x = 2;
int y = 5;
int z = 0;
System.out.println(x == 2);
System.out.println(x != 5);
System.out.println(x != 5 && y >= 5);
System.out.println(z != 0 || x == 2);
System.out.println(!(y < 10));
```

```
PROBLEMS 1  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

true
true
true
false
PS C:\Users\SUMIT SHAH>
```

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
// Ask student if he/she has medical cause or not ( 'y or 'n' ). if (‘y’) print you are not allowed to sit in
Scanner sc = new Scanner(System.in);
System.out.print(s:" If you have medical cause or not ( 'y or 'n' ) : ");
char c = sc.next().charAt(index:0);
String result = (c == 'y') ? ("You are not allowed to sit in exam. ") : ("You are allowed to sit in exam.");
System.out.println(result);
sc.close();
```

```
PROBLEMS 1  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

 If you have medical cause or not ( 'y or 'n' )y
You are not allowed to sit in exam.
PS C:\Users\SUMIT SHAH>  & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\U
sers\SUMIT SHAH\AppData\Local\Temp\vscodesws_8c098\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
 If you have medical cause or not ( 'y or 'n' ) : n
You are allowed to sit in exam.
PS C:\Users\SUMIT SHAH>
```

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

```java
// Write a program to check the odd and even numbers using user input.
Scanner sc = new Scanner(System.in);
System.out.print(s:"Enter a number : ");
int n = sc.nextInt();
String result = (n % 2 == 0) ? ("EVEN NUMBER.") : ("ODD NUMBER. ");
System.out.println(result);
sc.close();
```

```
PROBLEMS 1  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

Enter a number : 3
ODD NUMBER.
PS C:\Users\SUMIT SHAH>  & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\SUMIT SHAH\AppData\Local\Temp\vscodesws_8c098\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
Enter a number : 100
EVEN NUMBER.
PS C:\Users\SUMIT SHAH>
```

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
// 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 in
    Scanner sc = new Scanner(System.in);
    System.out.print(s:"Enter the number. (x>5 and less x<15): ");
    int x = sc.nextInt();
    int r = (x>5 && x<15) ? (x) : (0);
    System.out.println(r);
    sc.close();
```

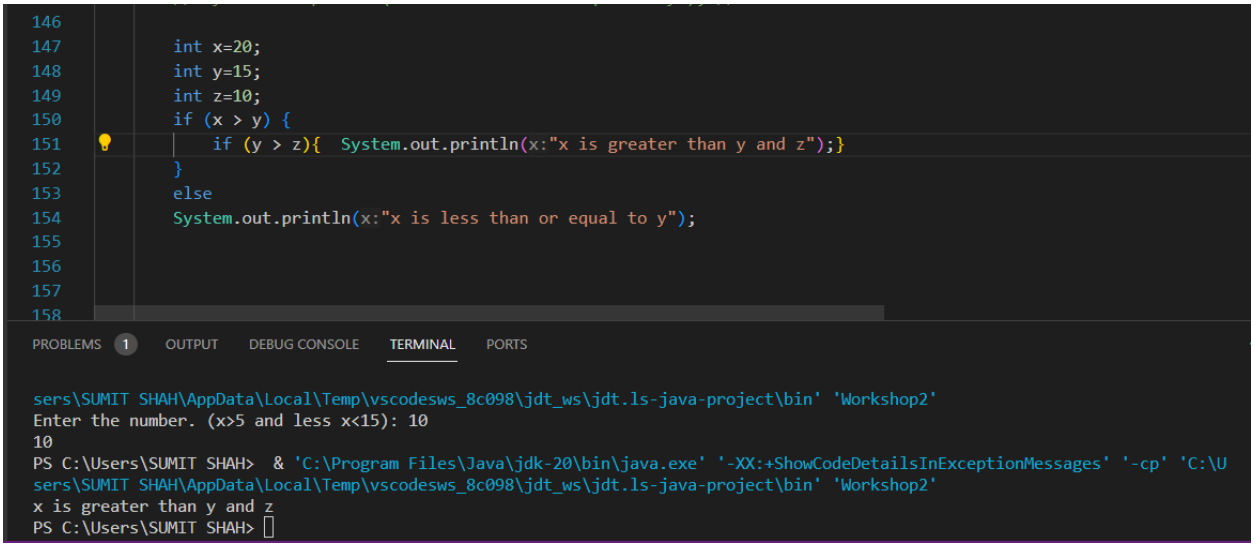
```
PROBLEMS 1  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

Enter the number. (x>5 and less x<15): 15
0
PS C:\Users\SUMIT SHAH>  & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\SUMIT SHAH\AppData\Local\Temp\vscodesws_8c098\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
Enter the number. (x>5 and less x<15): 10
10
PS C:\Users\SUMIT SHAH>
```

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.



```
146
147         int x=20;
148         int y=15;
149         int z=10;
150         if (x > y) {
151             if (y > z){  System.out.println(x:"x is greater than y and z");}
152         }
153         else
154         System.out.println(x:"x is less than or equal to y");
155
156
157
158
```

```
PROBLEMS 1   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS

sers\SUMIT SHAH\AppData\Local\Temp\vscodesws_8c098\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
Enter the number. (x>5 and less x<15): 10
10
PS C:\Users\SUMIT SHAH>  & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\U
sers\SUMIT SHAH\AppData\Local\Temp\vscodesws_8c098\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
x is greater than y and z
PS C:\Users\SUMIT SHAH>
```

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

```java
Scanner sc = new Scanner(System.in);
System.out.print(s:"Enter your Grade : ");
String input = sc.nextLine();
switch (input) {
    case "A+":
        System.out.println(x:"Excellent!");
        break;
    case "A":
        System.out.println(x:"Can do better!");
        break;
    case "B+":
        System.out.println(x:"You Failed!");
        break;
    case "B":
        System.out.println(x:"Outstanding!");
        break;
    case "C+":
        System.out.println(x:"Good!");
        break;
    case "C":
        System.out.println(x:"Just Passed!");
        break;
    default:
        System.out.println(x:"Invalid grade!");
}
```

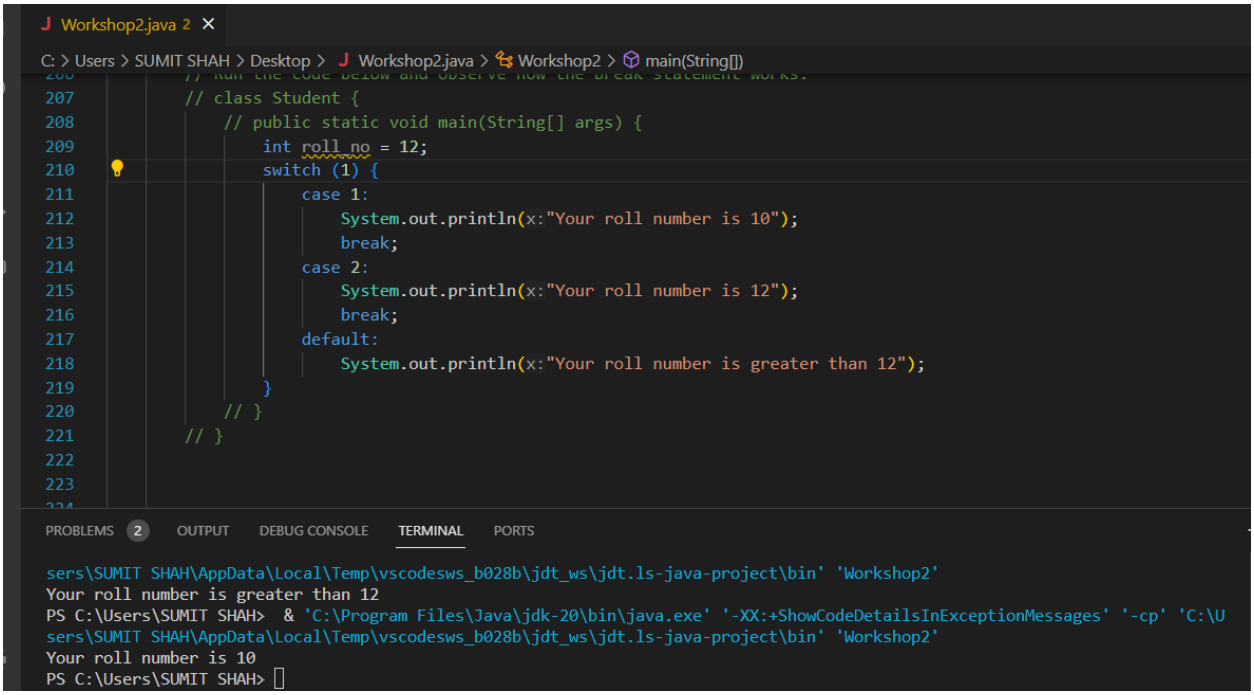
```java
174         Scanner sc = new Scanner(System.in);
175         System.out.print(s:"Enter your Grade : ");
176         String input = sc.nextLine();
177         switch (input) {
178             case "A+":
179                 System.out.println(x:"Excellent!");
180                 break;
181             case "A":
182                 System.out.println(x:"Can do better!");
183                 break;
184             case "B+":
185                 System.out.println(x:"You Failed!");
186                 break;
187             case "B":
188                 System.out.println(x:"Outstanding!");
189                 break;
190             case "C+":
191                 System.out.println(x:"Good!");
```

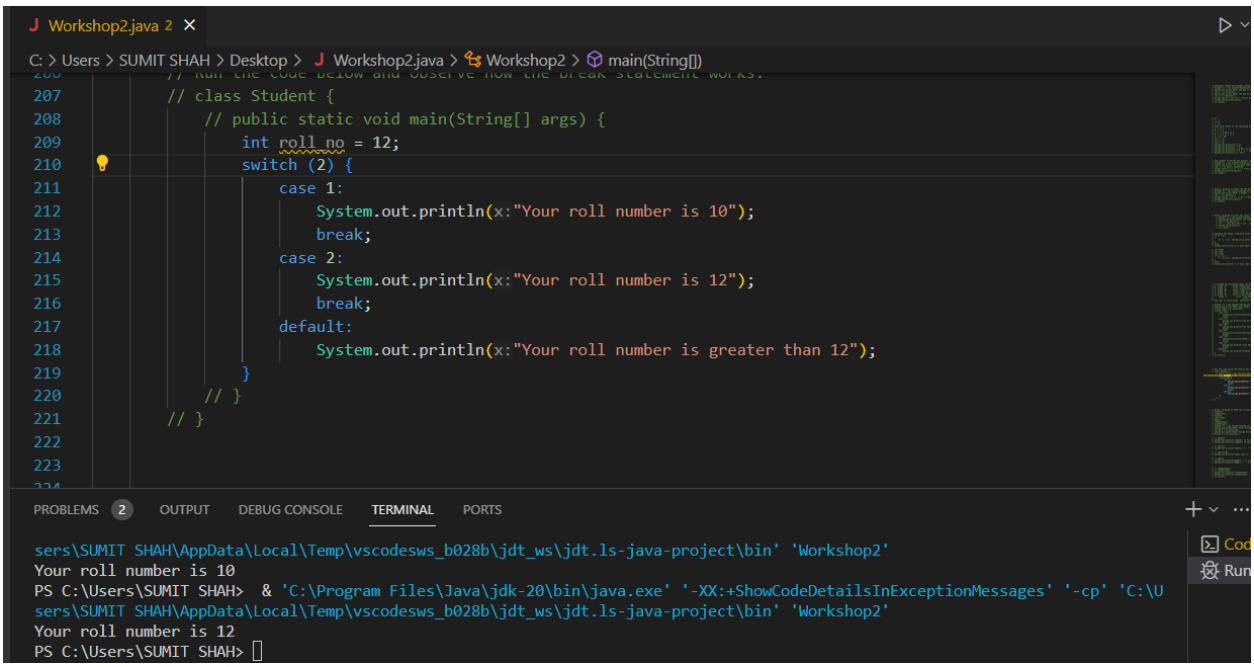
```
PROBLEMS 1  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

Excellent!
PS C:\Users\SUMIT SHAH>  & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\SUMIT SHAH\AppData\Local\Temp\vscodesws_b028b\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
Enter your Grade : A+
Excellent!
PS C:\Users\SUMIT SHAH>
```

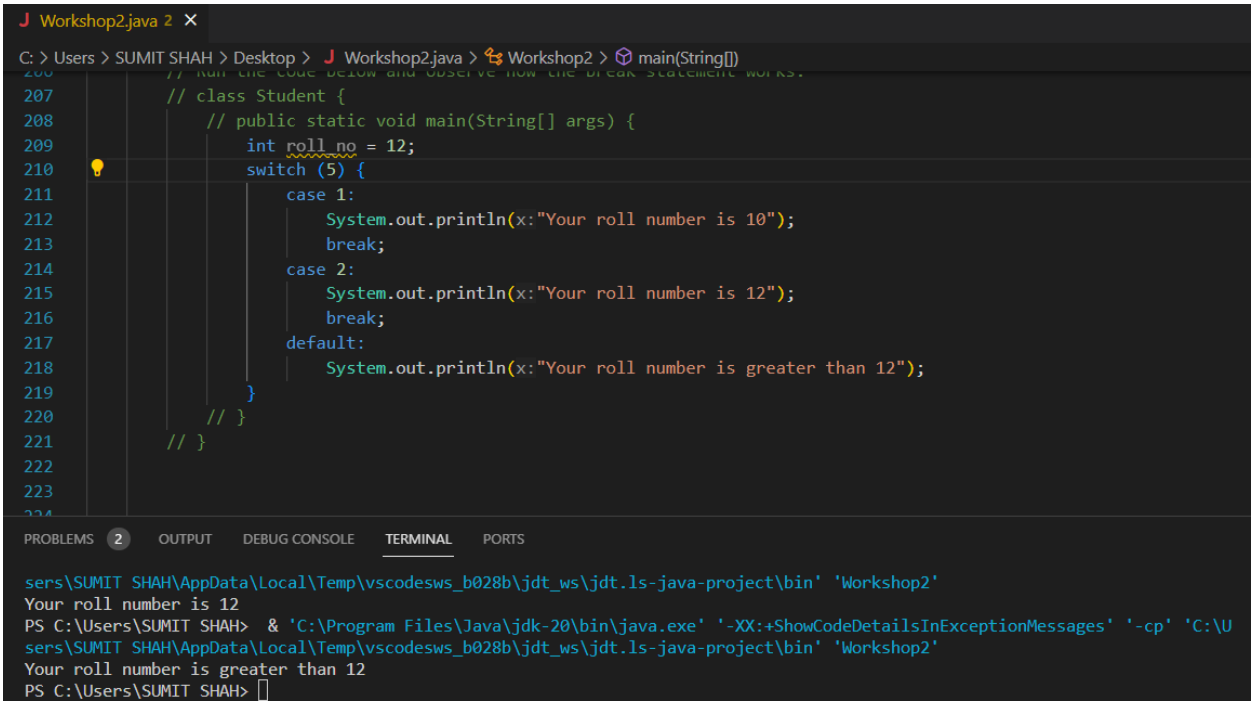
10. Run the code below and observe how the break statement works.

```
class Student {
    public static void main(String[] args) {
        int roll_no = 12;
        switch (i) {
            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");
        }
    }
}
```


Workshop2.java 2
C: > Users > SUMIT SHAH > Desktop > Workshop2.java > Workshop2 > main(String[])
// class Student {
// public static void main(String[] args) {
int roll_no = 12;
switch (1) {
case 1:
System.out.println(x:"Your roll number is 10");
break;
case 2:
System.out.println(x:"Your roll number is 12");
break;
default:
System.out.println(x:"Your roll number is greater than 12");
}
// }
// }
PROBLEMS 2
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
sers\SUMIT SHAH\AppData\Local\Temp\vscodesws_b028b\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
Your roll number is greater than 12
PS C:\Users\SUMIT SHAH> & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\U
sers\SUMIT SHAH\AppData\Local\Temp\vscodesws_b028b\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
Your roll number is 10
PS C:\Users\SUMIT SHAH>


Workshop2.java 2
C: > Users > SUMIT SHAH > Desktop > Workshop2.java > Workshop2 > main(String[])
// class Student {
// public static void main(String[] args) {
int roll_no = 12;
switch (2) {
case 1:
System.out.println(x:"Your roll number is 10");
break;
case 2:
System.out.println(x:"Your roll number is 12");
break;
default:
System.out.println(x:"Your roll number is greater than 12");
}
// }
// }
PROBLEMS 2
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
sers\SUMIT SHAH\AppData\Local\Temp\vscodesws_b028b\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
Your roll number is 10
PS C:\Users\SUMIT SHAH> & 'C:\Program Files\Java\jdk-20\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\U
sers\SUMIT SHAH\AppData\Local\Temp\vscodesws_b028b\jdt_ws\jdt.ls-java-project\bin' 'Workshop2'
Your roll number is 12
PS C:\Users\SUMIT SHAH>



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
// toLowerCase()
Scanner sc = new Scanner(System.in);
System.out.print(s:"Enter First String : ");
String a = sc.nextLine();
System.out.print(s:"Enter Second String : ");
String b = sc.nextLine();

// length()
System.out.println("length() of First String: " + a.length());
System.out.println("length() of Second String: " + b.length());

// charAt()
System.out.println("charAt() a : " + a.charAt(index:2) );

// substring()
System.out.println("substring() a : "+ a.substring(beginIndex:2, endIndex:4));

// Equals
System.out.println("Equals : " + a.equals(b));
System.out.println("Equals : " + b.equals(a));


// toUpperCase()
// toLowerCase()
System.out.println("toUpperCase() : " + a.toUpperCase());
System.out.println("toLowerCase() : " + b.toLowerCase());
```

```
charAt() a : M
substring() a : MI
Equals : false
Equals : false
toUpperCase() : SUMIT
toLowerCase() : shah
PS C:\Users\SUMIT SHAH>
```