CSE 1007 Java Programming
LAB ASSIGNMENT – 1

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Slot: C1 (L53 + L54)

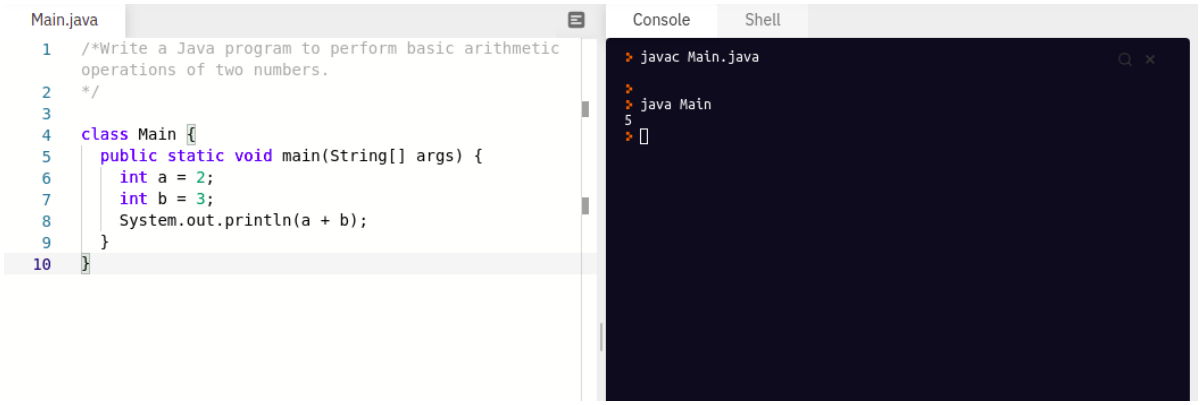
(Note: The earlier programs have been done using online IDE repl.it and the later in VS Code with terminal (`javac` and `java)` commands)

1. Write a Java program to perform basic arithmetic operations of two numbers.

Code:

```
class Main {
 public static void main(String[] args) {
   int a = 2;
   int b = 3;
   System.out.println(a + b);
 }
}
```

Output:

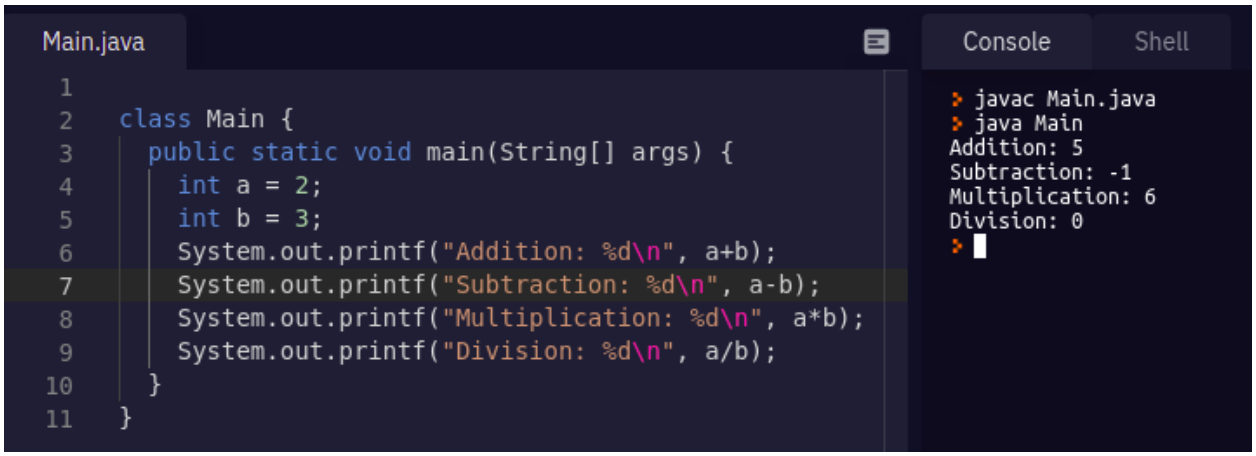


2. Write a Java program to perform operation (Addition, Subtraction, Multiplication, Division)
without using the third variable.

Code:

```
class Main {
 public static void main(String[] args) {
   int a = 2;
   int b = 3;
   System.out.printf("Addition: %d\n", a+b);
   System.out.printf("Subtraction: %d\n", a-b);
   System.out.printf("Multiplication: %d\n", a*b);
   System.out.printf("Division: %d\n", a/b);
 }
}
```

Output:



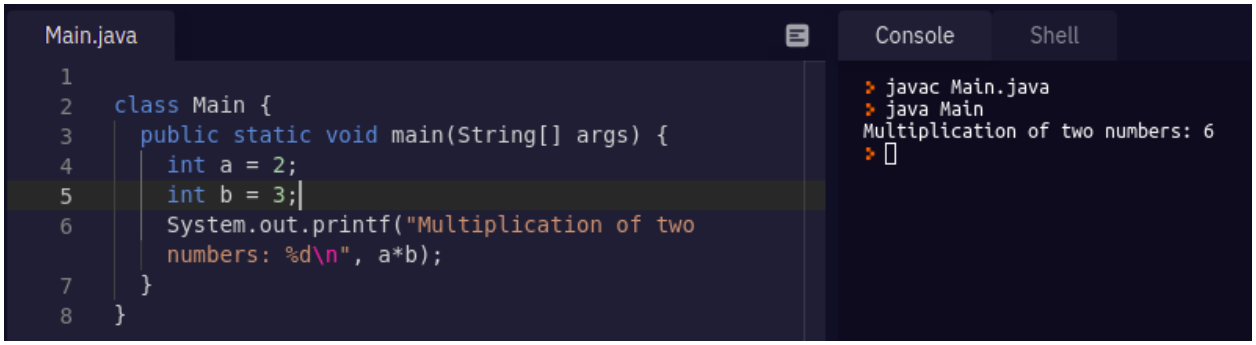
3. Write a Java program to perform Multiplication of two numbers without using * operator.

Code:

```
class Main {
 public static void main(String[] args) {
   int a = 2;
   int b = 3;
```

```
   System.out.printf("Multiplication of two numbers: %d\n", a*b);
 }
}
```

Output:



4. Write a Java program to check if the year is leap year or not.

Code:

```
class Main {
 public static void main(String[] args) {
   int year = 2020;
   if(((year%4 == 0 )&& (year%100 != 0)) || (year%400 == 0)){
     System.out.println("It's a leap year!");
   }
   else{
     System.out.println("Not a leap year!");
   }
 }
}
```

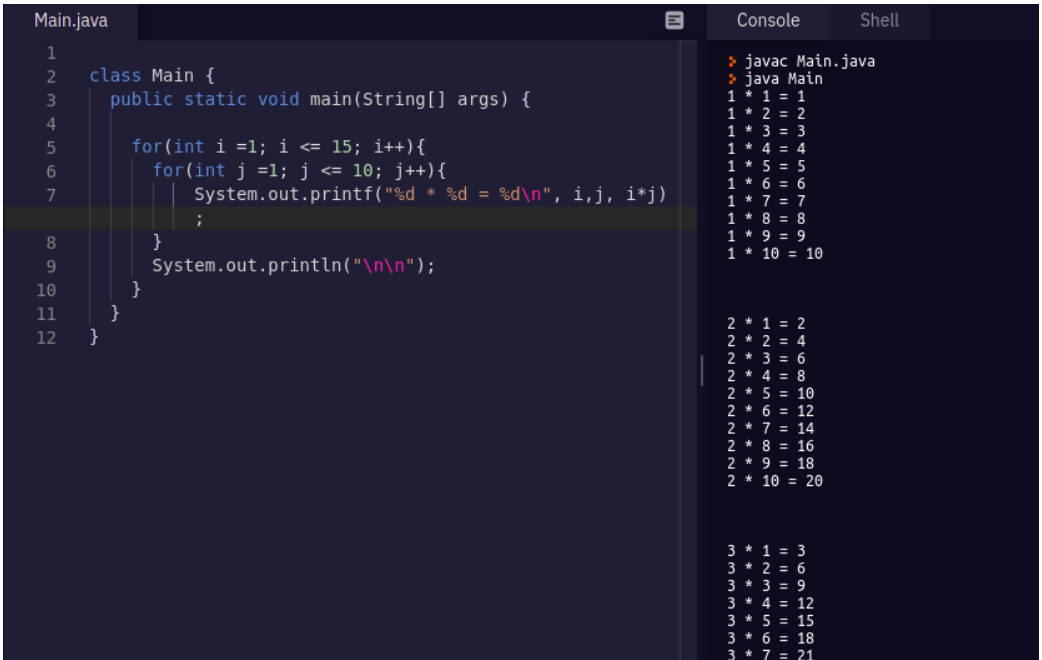
Output:

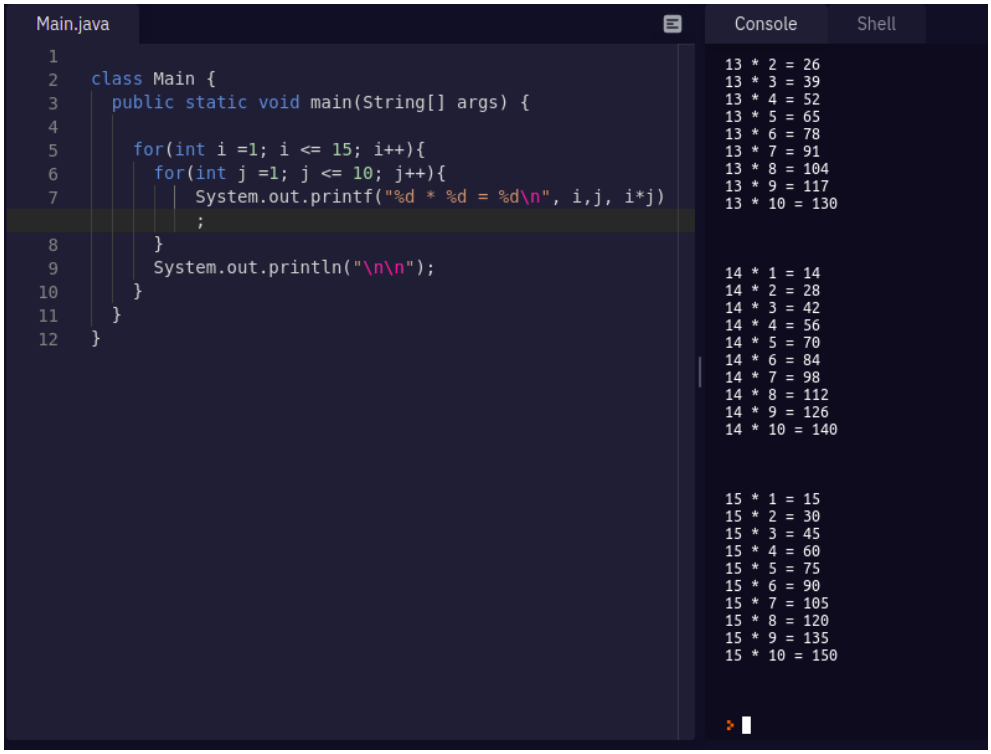
5. Write a Java program to print multiplication Table (1 to 15).

Code:

```
class Main {
 public static void main(String[] args) {

   for(int i =1; i <= 15; i++){
     for(int j =1; j <= 10; j++){
         System.out.printf("%d * %d = %d\n", i,j, i*j);
     }
     System.out.println("\n\n");
   }
 }
}
```

Output:



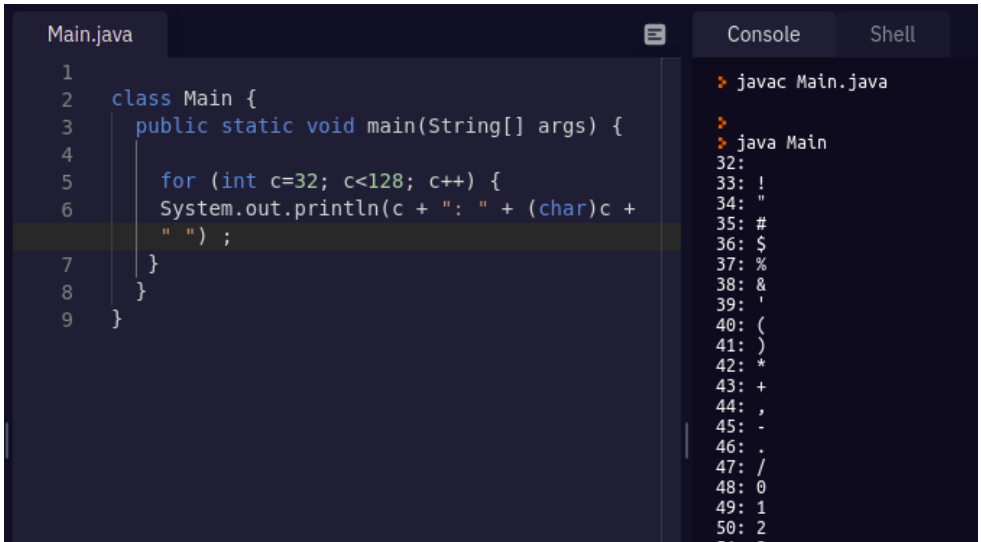


6. Write a Java Program to print ASCII Table.

Code:

```
class Main {
 public static void main(String[] args) {

   for (int c=32; c<128; c++) {
   System.out.println(c + ": " + (char)c + " ") ;
  }
 }
}
```

Output:



Main.java

```java
class Main {
  public static void main(String[] args) {

    for (int c=32; c<128; c++) {
    System.out.println(c + ": " + (char)c +
    " ") ;
  }
  }
}
```

Console Shell

```
67: C
68: D
69: E
70: F
71: G
72: H
73: I
74: J
75: K
76: L
77: M
78: N
79: O
80: P
81: Q
82: R
83: S
84: T
85: U
86: V
87: W
88: X
89: Y
90: Z
91: [
92: \
93: ]
94: ^
95: _
96: `
97: a
98: b
99: c
100: d
101: e
102: f
103: g
104: h
105: i
```

Main.java

```java
class Main {
  public static void main(String[] args) {

    for (int c=32; c<128; c++) {
    System.out.println(c + ": " + (char)c +
    " ") ;
  }
  }
}
```

Console Shell

```
90: Z
91: [
92: \
93: ]
94: ^
95: _
96: `
97: a
98: b
99: c
100: d
101: e
102: f
103: g
104: h
105: i
106: j
107: k
108: l
109: m
110: n
111: o
112: p
113: q
114: r
115: s
116: t
117: u
118: v
119: w
120: x
121: y
122: z
123: {
124: |
125: }
126: ~
127:
```

7. Write a Java program to Calculate and Display the sum of 4 digits numbers.

Code:

```
class Main {
 public static void main(String[] args) {
   int a = 6478;
   int sum = 0, digit;
   while(a > 0){
     digit = a%10;
     sum += digit;
     a = a/10;
   }
   System.out.printf("Sum and display: %d" , sum );
 }
}
```

Output:

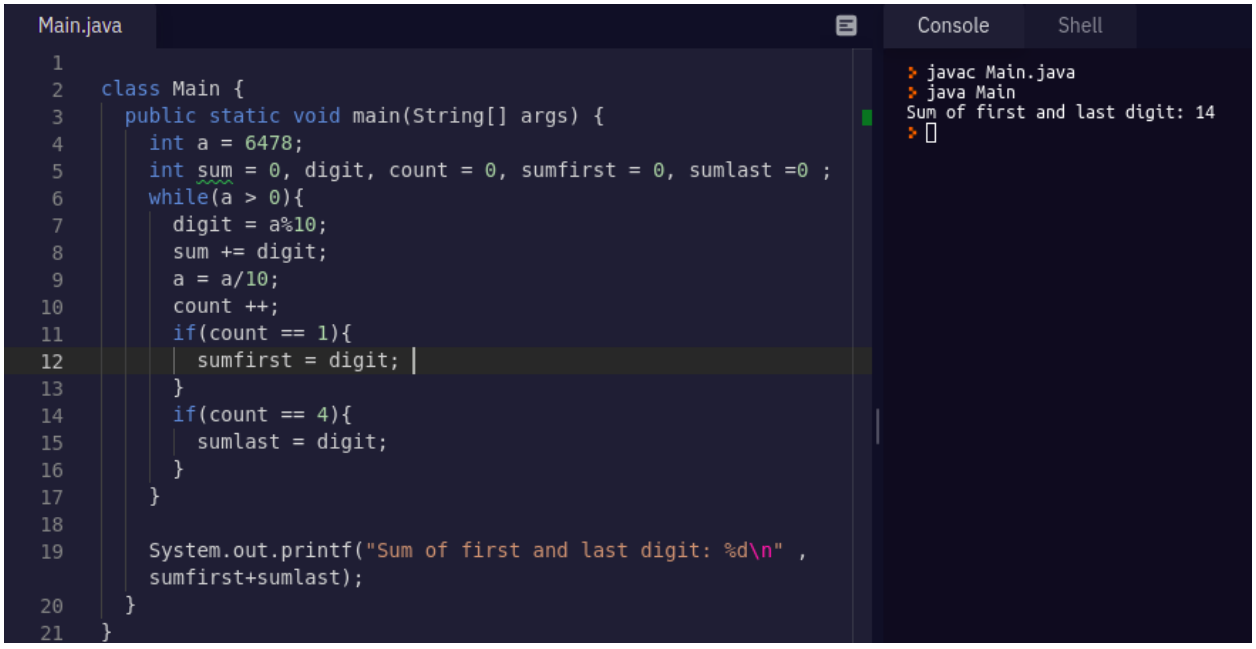
6. Write a Java program to Obtain the sum of the first and last digit of a four digit number.

Code:

```
class Main {
 public static void main(String[] args) {
```

```
   int a = 6478;
   int sum = 0, digit, count = 0, sumfirst = 0, sumlast =0 ;
   while(a > 0){
     digit = a%10;
     sum += digit;
     a = a/10;
     count ++;
     if(count == 1){
       sumfirst = digit;
     }
     if(count == 4){
       sumlast = digit;
     }
   }

   System.out.printf("Sum of first and last digit: %d\n" ,
sumfirst+sumlast);
 }
}
```

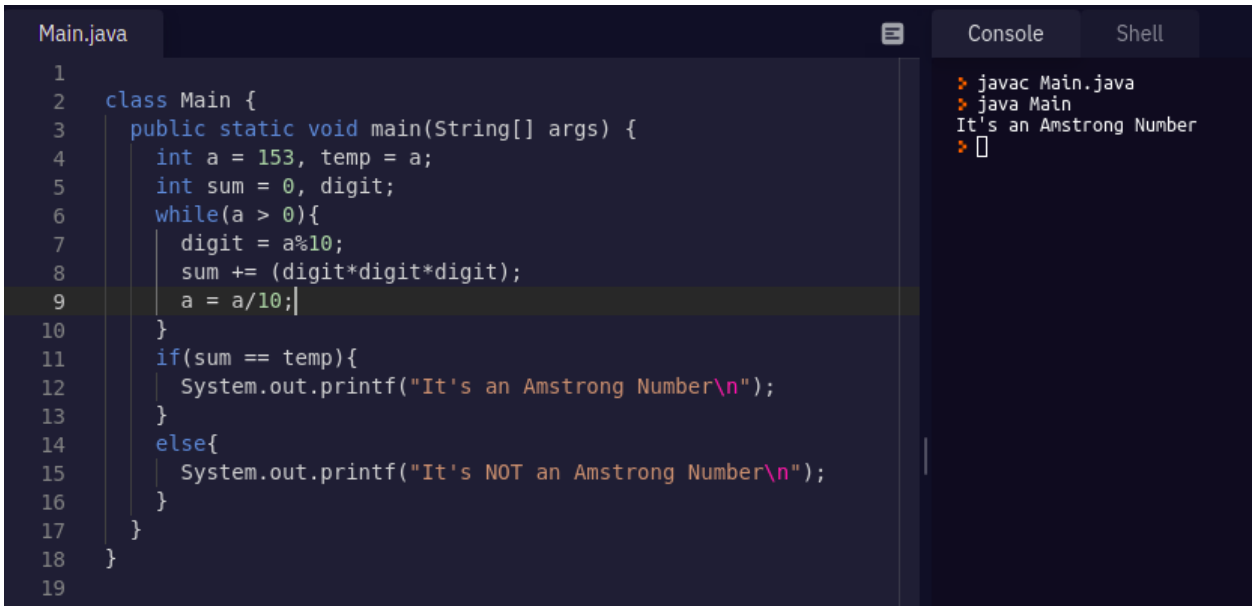
Output:



7. Write a Java program to check whether a given number is Armstrong or not.

```
class Main {
 public static void main(String[] args) {
   int a = 153, temp = a;
   int sum = 0, digit;
   while(a > 0){
     digit = a%10;
     sum += (digit*digit*digit);
     a = a/10;
   }
   if(sum == temp){
     System.out.printf("It's an Amstrong Number\n");
   }
   else{
     System.out.printf("It's NOT an Amstrong Number\n");
   }
 }
}
```

Output:

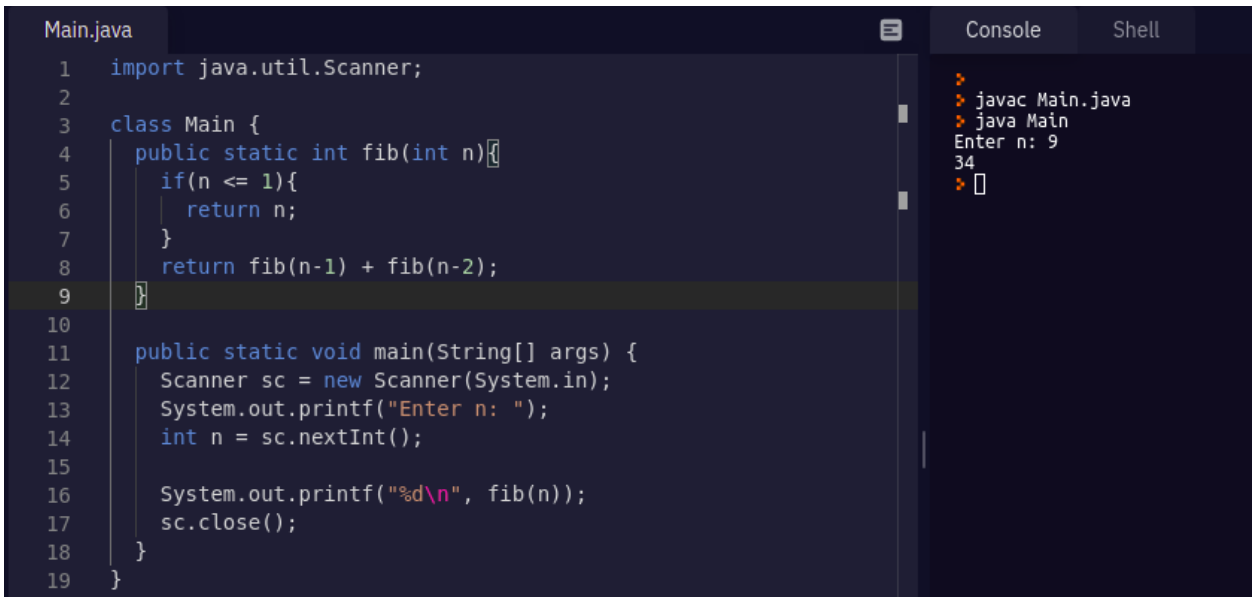


8.Write a Java program to print Fibonacci Series.

Code:

```java
import java.util.Scanner;

class Main {
 public static int fib(int n){
   if(n <= 1){
     return n;
   }
   return fib(n-1) + fib(n-2);
 }

 public static void main(String[] args) {
   Scanner sc = new Scanner(System.in);
   System.out.printf("Enter n: ");
   int n = sc.nextInt();

   System.out.printf("%d\n", fib(n));
   sc.close();
 }
}
```

Output:



9.Write a Java program to print Factorial of Number

Code:

```
import java.util.Scanner;

class Main {
 public static int fact(int n){
   if(n == 0){
     return 1;
   }
   else
   return (n)*fact(n-1);
 }

 public static void main(String[] args) {
   Scanner sc = new Scanner(System.in);
   System.out.printf("Enter n: ");
   int n = sc.nextInt();

   System.out.printf("Factorial is %d\n", fact(n));
   sc.close();
 }
}
```

Output:

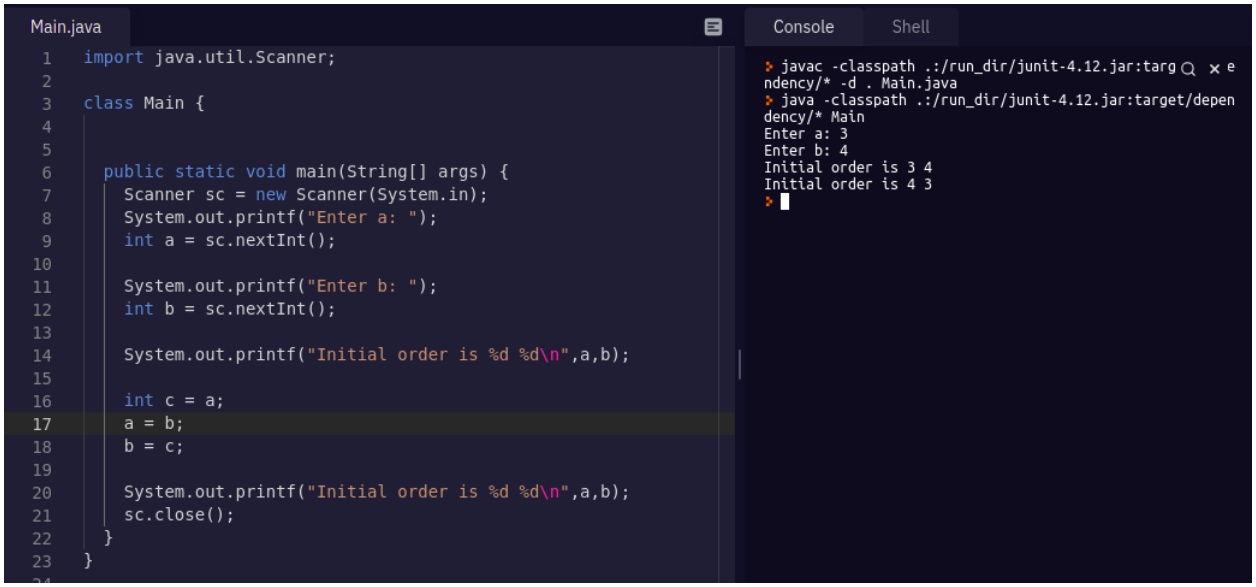
10.Write a Java program to swap two numbers using a third variable.

Code:

```
import java.util.Scanner;

class Main {

 public static void main(String[] args) {
   Scanner sc = new Scanner(System.in);
   System.out.printf("Enter a: ");
   int a = sc.nextInt();

   System.out.printf("Enter b: ");
   int b = sc.nextInt();

   System.out.printf("Initial order is %d %d\n",a,b);

   int c = a;
   a = b;
   b = c;

   System.out.printf("Initial order is %d %d\n",a,b);
   sc.close();
```

```
  }
}
```

Output:



11.Write a Java program to swap two numbers without using a third variable.

Code:

```
import java.util.Scanner;

class Main {

 public static void main(String[] args) {
   Scanner sc = new Scanner(System.in);
   System.out.printf("Enter a: ");
   int a = sc.nextInt();

   System.out.printf("Enter b: ");
   int b = sc.nextInt();

   System.out.printf("Initial order is %d %d\n",a,b);

   a = a+b;
   b = a-b;
   a = a-b;
```

```
    System.out.printf("Final order is %d %d\n",a,b);
    sc.close();
  }
}
```

Output:

12. Write a Java program to calculate the power of Number.

```
import java.util.Scanner;

public class Q12 {
  public static void main(String[] args) {
   int base, exp, pow = 1, Sum;
   Scanner sc = new Scanner(System.in);
   System.out.println("Enter base");
   base = sc.nextInt();
   System.out.println("Enter exponent");
   exp = sc.nextInt();
   for(int i = 0; i < exp; ++i) {
     pow *= base;
   }
   System.out.println("The power " + base + "^" + exp + " = " + pow);
 }
}
```

Output:

```
❯ javac Q12.java
❯ java Q12
Enter base
13
Enter exponent
3
The power 13^3 = 2197
```

13. Write a Java program to find the sum of all digits between 10 and 50, which are divisible by 3.

Code:

```java
public class Q13 {
 public static void main(String[] args) {
  int Sum = 0;
  for(int i = 10; i <= 50; ++i) {
   if(i % 3 == 0) {
     Sum += i;
   }
  }
  System.out.println("Sum of all digits between 10 and 50, which are divisible by 3" + Sum);
}
}
```

Output:

```
❯ javac Q13.java
❯ java Q13
Sum of all digits between 10 and 50, which are divisible by 3390
```

14. Write a Java program to find out all odd numbers divisible by 5 from the range of integers 200 to 800.

```java
public class Q14 {
 public static void main(String[] args) {
```

```
  for(int i = 200; i <= 800; ++i) {
    if(i % 2 != 0 && i % 5 == 0) {
      System.out.print(i + ", ");
    }
  }
}
}
```

Output:

```
❯ javac Q14.java
❯ java Q14
205, 215, 225, 235, 245, 255, 265, 275, 285, 295, 305, 315, 325, 335, 345, 355, 3
65, 375, 385, 395, 405, 415, 425, 435, 445, 455, 465, 475, 485, 495, 505, 515, 52
5, 535, 545, 555, 565, 575, 585, 595, 605, 615, 625, 635, 645, 655, 665, 675, 685
, 695, 705, 715, 725, 735, 745, 755, 765, 775, 785, 795,
```

15. Write a Java Program to read the number and check whether it is divisible by 3 and 5.Write a Java Program to display Subject Name based on room number. If the user enters 604 then display Java Programming, If the user enters 605 then display Python programming for any other input display Invalid input to the user

```
import java.util.Scanner;

public class Q15 {
 public static void main(String[] args) {
  int n;
  Scanner sc = new Scanner(System.in);
  System.out.println("Enter 604 for Java Programming \n Enter 605 for Python
Programming ");
  n = sc.nextInt();
  if(n % 3 == 0) {
    System.out.println("Divisible by 3");
  } if(n % 5 == 0) {
    System.out.println("Divisible by 5");
  } if (n == 604) {
    System.out.println("Java Programming");
```

```
  } else if (n == 605) {
    System.out.println("Python Programming");
  } else {
    System.out.println("Invalid Number");
  }
  sc.close();
}
}
```

Output:

```
❯ javac Q15.java
❯ java Q15
Enter 604 for Java Programming
 Enter 605 for Python Programming
15
Divisible by 3
Divisible by 5
Invalid Number
❯ java Q15
Enter 604 for Java Programming
 Enter 605 for Python Programming
605
Divisible by 5
Python Programming
```

16. Write a Java Program to print the sum of the series 1 +2 +3 up to n terms

```
import java.util.Scanner;

public class Q16 {
 public static void main(String[] args) {
  int n, Sum;
  Scanner sc = new Scanner(System.in);
  System.out.println("Enter n (1 + 2 + 3 + .. + n)");
  n = sc.nextInt();
  Sum = n*(n+1)/2;
  System.out.println(Sum);
```

```
  sc.close();
 }
}
```

Output:

```
❯ javac Q16.java
❯ java Q16
Enter n (1 + 2 + 3 + .. + n)
32
528
```

17. Write a Java Program to print the sum of first n numbers. If n is 3 then print the sum of (1^2)+(2^2)+(3^2) to the user. Get n from the user

```
import java.util.Scanner;

public class Q17 {
 public static void main(String[] args) {
  int n, Sum;
  Scanner sc = new Scanner(System.in);
  System.out.println("Enter n ((1^2) + (2^2) + (3^2) + (..^2) + (n^2))");
  n = sc.nextInt();
  Sum = n*(n+1)*(2*n + 1) / 6;
  System.out.println(Sum);
  sc.close();
 }
}
```

Output:

```
❯ javac Q17.java
❯ java Q17
Enter n ((1^2) + (2^2) + (3^2) + (..^2) + (n^2))
22
3795
```

18. Write a Java Program to print the multiplication table by getting the n from the user.

```java
import java.util.Scanner;

public class Q18 {
 public static void main(String[] args) {
  int n;
  Scanner sc = new Scanner(System.in);
  System.out.println("Enter number for table");
  n = sc.nextInt();
  for (int i = 1; i <= 10; ++i) {
   System. out. println(n+" * "+i+" = "+n*i);
  }
 }
}
```

Output:

```
❯ javac Q18.java
❯ java Q18
Enter number for table
13
13 * 1 = 13
13 * 2 = 26
13 * 3 = 39
13 * 4 = 52
13 * 5 = 65
13 * 6 = 78
13 * 7 = 91
13 * 8 = 104
13 * 9 = 117
13 * 10 = 130
```

19. Write a Java Program to provide the option of adding two numbers to the user until the user

```java
import java.util.Scanner;

class Q19 {
```

```java
public static void main(String args[]) {
  int a, b, c, user = 0;
  Scanner sc = new Scanner(System.in);
  while(user != 2) {
    System.out.println("1st Number: ");
    a = sc.nextInt();
    System.out.println("2nd Number: ");
    b = sc.nextInt();
    c = a + b;
    System.out.print("The sum is: ");
    System.out.println(c);
    System.out.println("1. Add more numbers \n2. Exit");
    user = sc.nextInt();
  }
  sc.close();
}
}
```

Output:

```
❯ javac Q19.java
❯ java Q19
1st Number:
12
2nd Number:
2378
The sum is: 2390
1. Add more numbers
2. Exit
1
1st Number:
39
2nd Number:
90
The sum is: 129
1. Add more numbers
2. Exit
2
Exiting ...
```