ASSIGNMENT – 6 (Wrapper Classes, Loops and Arrays (Sec on G)) (•Wrapper class• Need for the wrapper class• Different techniques of wrapping• Autoboxing• Unboxing)

SUBJECT : CSW - 1 (CSE 2141)

NAME : Anupam Chandra

REGD. NO : 2341003015

SECTION : 23412G1

BRANCH : B.TECH (CSE)

Q1

. Write a program to convert an integer to an Integer object. (a) Autoboxing (b) Using Constructor

```java
package csw1;

public class As_6_Q1 {



public static void main(String[] args) {
 int primitiveInt = 42;
 Integer autoBoxedInteger = primitiveInt;
 System.out.println("Autoboxed Integer: " + autoBoxedInteger);

 Integer integerWithConstructor = new Integer(primitiveInt);
 System.out.println("Integer with Constructor: " + integerWithConstructor);
 }
}
```

Q2. Write a program to convert a float to a Float object. (a) Autoboxing (b) Using Constructor

```
package csw1;

public class AS_6_Q2 {

public static void main(String[] args) {
float primitiveFloat = 42.3f;
Float autoBoxedFloat = primitiveFloat;
System.out.println("Autoboxed Float: " +autoBoxedFloat);

Float floatWithConstructor = new Float(primitiveFloat);
System.out.println("Float with Constructor: " + floatWithConstructor);

}
}
```

Q3. Write a program to convert a double to a Double object. (a) Autoboxing (b) Using Constructor

```
package csw1;

public class As_6_Q3 {
public static void main(String[] args) {
double primitiveDouble = 45.5;
Double autoBoxedDouble = primitiveDouble;
System.out.println("Autoboxed Integer: " +autoBoxedDouble);

Double doubleWithConstructor = new Double( primitiveDouble);
System.out.println("Integer with Constructor: " + doubleWithConstructor);

}

}
```

Q4. Write a program to convert a boolean to a Boolean object. (a) Autoboxing (b) Using Constructor

```
package csw1;
```

```java
public class As_6_Q4 {
public static void main(String[] args) {
boolean primitiveBoolean = 1<2;
Boolean autoBoxedBoolean = primitiveBoolean;
System.out.println("Autoboxed Boolean: " +autoBoxedBoolean);

Boolean booleanWithConstructor = new Boolean(primitiveBoolean);
System.out.println("Boolean with Constructor: " + booleanWithConstructor);

}

}
```

Q5. Write a program to read an integer as a string and convert it to an Integer object.

```java
package csw1;
import java.util.*;
public class As_6_Q5 {

 public static void main(String[] args) {

 Scanner scanner = new Scanner(System.in);



 System.out.print("Enter an integer as a string: ");
 String str = scanner.nextLine();



 Integer integerObject = Integer.valueOf(str);

 System.out.println("The Integer object is: " + integerObject);



 scanner.close();
 }
}
```

Q6. Write a program to read a float as a string and convert it to a Float object.

```
package csw1;
import java.util.*;
public class As_6_Q_6 {
public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.println("Enter a float as a string: ");
String str = scanner.nextLine();

Float floatObject = Float.valueOf(str);
System.out.println("The Float object is: " + floatObject);

scanner.close();
}


}
```

Q7. Write a program to read a double as a string and convert it to a Double object.

```
package csw1;

public class As_6_Q_7 {
public static void main(String[] args) {
String doubleString = "45.8";
double doubleObject = Double.parseDouble(doubleString);
System.out.println("The Double object is: " + doubleObject );
}
}
```

Q8. Write a program to read a boolean as a string and convert it to a Boolean object. Explain the concept of converting a base data type to an object type(Wrapping) using the valueOf() method.

```
package csw1;

public class As_6_Q_8 {
public static void main(String[] args) {
String booleanString = "true";
boolean booleanObject = Boolean.parseBoolean(booleanString);
System.out.println("The boolean object is: " + booleanObject );
Boolean StringValue= Boolean.valueOf(booleanObject);
System.out.println("String value using valueOf:"+ StringValue);
}

}
```

Q9. Write a program that reads to convert int, float, double, and boolean as string types and convert them to respective object types using the valueOf method.

```
package csw1;

public class As_6_Q_9 {
public static void main(String[] args) {
 int x=10;
 Integer st=Integer.valueOf(x);
System.out.println("The Integer is: " + st );
 float f=10.5f;
 Float st1=Float.valueOf(f);
System.out.println("The Float is: " + st1);
 double d=46.9;
 Double st2=Double.valueOf(d);
System.out.println("The Double is: " + st2);
 boolean b=2<9;
 Boolean st3=Boolean.valueOf(b);
System.out.println("The Boolean is: " + st3);

}
```

```
}
```

Q10. Write a program to design a simple calculator (only +,-,*,/ operations). The calculator works as follows: Input: "123+345" Output: Sum=468 Input: "5*10" Output: mul=50 Explain the concept of converting object type to base type. Explain the method used to do so.

```
package csw1;

import java.util.*;;
public class As_6_Q_10 {




 public static void main(String[] args) {
 Scanner sc = new Scanner(System.in);
 System.out.print("Enter input (e.g., 123+345): ");
 String input = sc.nextLine();

 char operator = input.replaceAll("[0-9]", "").charAt(0);
 String[] parts = input.split("[+\\-*/]");

 int num1 = Integer.parseInt(parts[0]);
 int num2 = Integer.parseInt(parts[1]);
 int result = switch (operator) {
 case '+' -> num1 + num2;
 case '-' -> num1 - num2;
 case '*' -> num1 * num2;
 case '/' -> (num2 != 0) ? num1 / num2 : 0;
 default -> 0;
 };

 System.out.println("Result = " + result);
 sc.close();
 }
}
```

Q11. Write a program that reads a double number as a sting and converts it to a double base type.

```
package csw1;



import java.util.Scanner;
public class As_6_Q_11 {

 public static void main(String[] args) {
 Scanner sc = new Scanner(System.in);
 System.out.print("Enter a double number as a string: ");

 String doubleString = sc.nextLine(); // Input as String
 double doubleValue = Double.parseDouble(doubleString); // Convert to double

 System.out.println("The double value is: " + doubleValue);
 sc.close();
 }
}
```

Q12. Write a program that reads an integer number as a sting and converts it to an int base type.

```
package csw1;
import java.util.Scanner;

public class As_6_Q_12 {
```

```
 public static void main(String[] args) {
 Scanner sc = new Scanner(System.in);
 System.out.print("Enter an integer number as a string: ");

 String intString = sc.nextLine();
 int intValue = Integer.parseInt(intString);

 System.out.println("The integer value is: " + intValue);
 sc.close();
 }
}
```

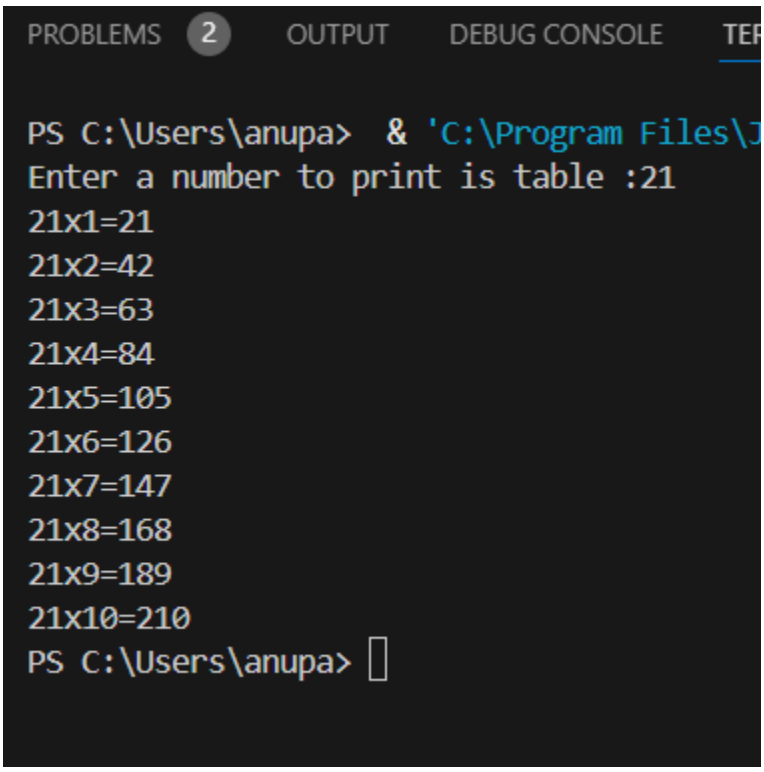
Q13. Write a program that prompts the user to input a posi ve integer. It should then print the mul plica on table of that number.

CODE:

```
package pack6;
import java.util.Scanner;
public class As6_Q13 {

      public static void main(String[] args) {
            // TODO Auto-generated method stub
            Scanner sc = new Scanner (System.in);

    System.out.print("Enter a number to print table :");
    int n=sc.nextInt();
    for (int i =1;i<=10;i++)
    {
        System.out.println(n + "x" + i + "=" + (n*i));
    }
```

```
    }

}
```

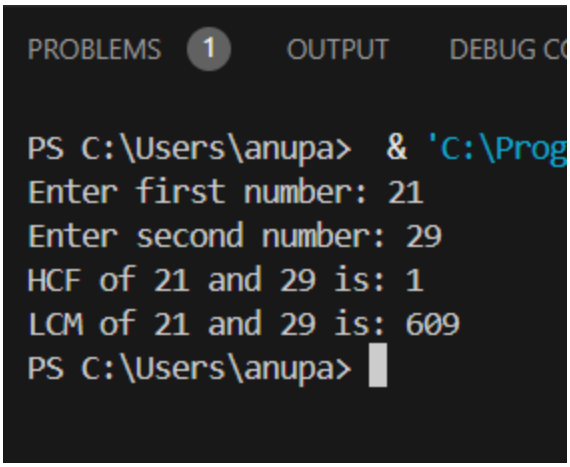
OUTPUT:



Q14. Write a java program to calculate HCF and LCM of Two given number.

CODE:

```java
package pack6;
import java.util.Scanner;
public class As6_Q14 {

      public static int hcf(int a, int b) {
            while (b != 0) {
                int temp = b;
                b = a % b;
                a = temp;
            }
            return a;
        }


        public static int lcm(int a, int b) {
            return (a * b) / hcf(a, b);
        }

        public static void main(String[] args) {
            Scanner sc = new Scanner(System.in);


            System.out.print("Enter first number: ");
            int num1 = sc.nextInt();

            System.out.print("Enter second number: ");
            int num2 = sc.nextInt();


            int hcfValue = hcf(num1, num2);
            int lcmValue = lcm(num1, num2);


            System.out.println("HCF of " + num1 + " and " +
    num2 + " is: " + hcfValue);
            System.out.println("LCM of " + num1 + " and " +
    num2 + " is: " + lcmValue);

            sc.close();
        }
    }
```



Q15. Write a program to calculate the sum of following series where n is input by user. 1 + 1/2 + 1/3 + 1/4 + 1/5 +.....1/n

CODE:

```
package pack6;
import java.util.Scanner;
public class As6_Q15 {
        public static void main(String[] args) {
            Scanner sc=new Scanner(System.in);
            System.out.print("Enter a value of n: ");
            int n=sc.nextInt();
            double result=1;
            System.out.print(1 + "+");
            for (int i=2;i<=n;i++)
            {
                result+=(1.0/i);
                if(i<n)
                System.out.print(" 1/"+i +" + ");
                else if(i==n)
                {
                    System.out.print(" 1/"+i);
                }
            }
            System.out.print("=" + result);
            }
        }
```

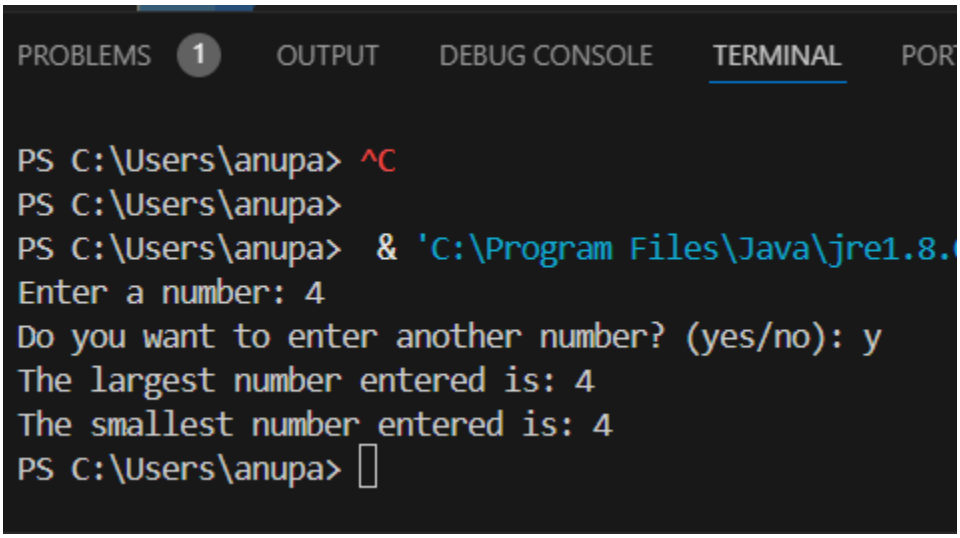
```
PS C:\Users\anupa>  & 'C:\Program Files\Java\jre1.8.0_351\bin\java.e
Enter a value of n: 8
1+ 1/2 +  1/3 +  1/4 +  1/5 +  1/6 +  1/7 +  1/8=2.7178571428571425
```

Q16. Write a program to enter the numbers ll the user wants and at the end the program should display the largest and smallest numbers entered.

CODE:

```java
package pack6;
import java.util.Scanner;
public class As6_Q16 {
        public static void main(String[] args) {
            Scanner S = new Scanner(System.in);

        int largest = Integer.MIN_VALUE;
        int smallest = Integer.MAX_VALUE;
        String continueInput = "yes";
        while (continueInput.equalsIgnoreCase("yes")) {
            System.out.print("Enter a number: ");
            int number = S.nextInt();

            if (number > largest) {
                largest = number;
            }
            if (number < smallest) {
                smallest = number;
            }
            System.out.print("Do you want to enter another number? (yes/no): ");
            continueInput = S.next();
```

```
        }
        System.out.println("The largest number entered is: " + largest);
        System.out.println("The smallest number entered is: " + smallest);
        S.close();
    }
}
```

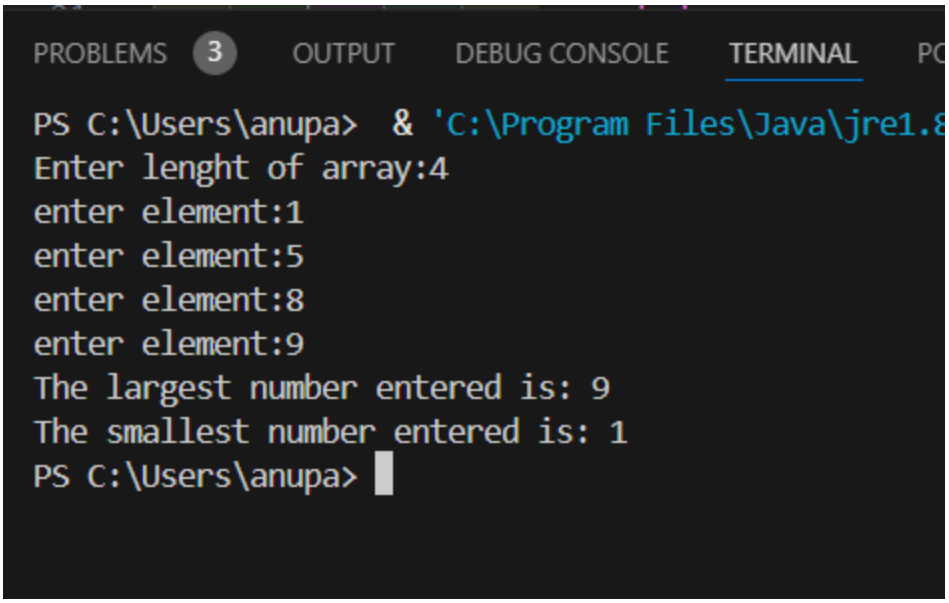


Q17. Write a java program to find the minimum and maximum element in an array.

CODE:

```
package pack6;
import java.util.Scanner;
public class As6_Q17 {
        public static void main(String[] args) {
            Scanner sc=new Scanner(System.in);
```

```
            System.out.print("Enter lenght of array:");
            int n=sc.nextInt();
            int a[]=new int[n];
            for (int i=0;i<n;i++)
            {
                System.out.print("enter element:");
                int temp=sc.nextInt();
                a[i]=temp;
            }
            int min=a[0];
            int max=a[0];
            for (int i=0;i<n;i++)
            {
                    if(a[i]>max)
                {
                    max=a[i];
                }
                if(a[i]<min)
                {
                    min=a[i];
                }

            }

            System.out.println("The largest number entered is: " + max);
            System.out.println("The smallest number entered is: " + min);
            sc.close();
        }

    }
```



Q18. Write java program to find the Kth largest and Kth smallest number in an array. CODE:

```java
package pack6;
import java.util.*;
public class As6_Q18 {
        public static void main(String[] args) {
            Scanner sc = new Scanner(System.in);

            // Input size of array
            System.out.println("Enter n:");
            int n = sc.nextInt();

            int a[] = new int[n];

            // Input elements of the array
            System.out.println("Enter " + n + "elements:");
            for (int i = 0; i < n; i++) {
                a[i] = sc.nextInt();
            }

            // Input k value
            System.out.print("Enter value of k: ");
```

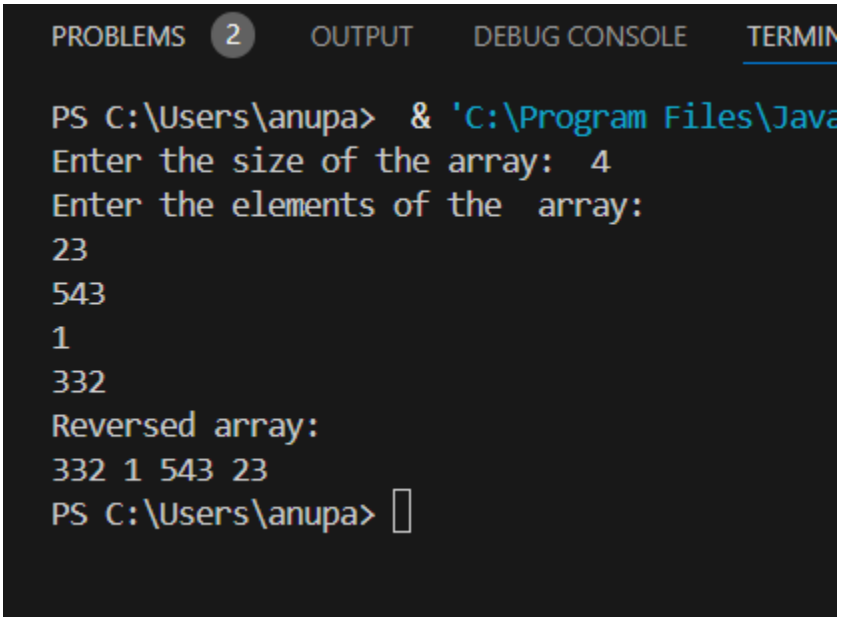
```
            int k = sc.nextInt();

            // Sort the array in ascending order
            Arrays.sort(a);

            // Check for valid k
            if (k > 0 && k <= n) {
                // kth smallest element is at index k-1
                System.out.println(k + "th smallest element  is: " + a[k - 1]);

                // kth largest element is at index n-k
                System.out.println(k + "th largest element is: " + a[n - k]);
            } else {
                System.out.println("Invalid value of k.");
            }

            sc.close();
        }
    }
```

```
PROBLEMS 2   OUTPUT   DEBUG CONSOLE   TERM

PS C:\Users\anupa>  & 'C:\Program Files\Jav
Enter n:
5
Enter 5elements:
1
4
67
5
4
Enter value of k: 3
3th smallest element  is: 4
3th largest element is: 4
PS C:\Users\anupa>
```

Q19. Write a java program to reverse the given array. (Without using Library func on) CODE:

```java
package pack6;
import java.util.*;
public class As6_Q19 {
        public static void main(String[] args) {
            Scanner scanner = new Scanner(System.in);
            System.out.print("Enter the size of the array:  ");
            int size = scanner.nextInt();
            int[] array = new int[size];
            System.out.println("Enter the elements of the  array:");
            for (int i = 0; i < size; i++) {
                array[i] = scanner.nextInt();
            }
            reverseArray(array);
            System.out.println("Reversed array:");
            for (int i = 0; i < size; i++) {
                System.out.print(array[i] + " ");
            }
            scanner.close();
        }
        public static void reverseArray(int[] array) {
            int start = 0;
            int end = array.length - 1;
            while (start < end) {
                int temp = array[start];
                array[start] = array[end];
                array[end] = temp;

                start++;
                end--;
            }
```

```
    }
}
```



Q20. Write a java program to sort the given array. (Without using Library func on)

CODE:

```
package pack6;
import java.util.*;
public class As6_Q20 {
        public static void main(String[] args) {
            Scanner scanner = new Scanner(System.in);

            System.out.print("Enter the size of the array: ");
            int size = scanner.nextInt();

            int[] array = new int[size];

            System.out.println("Enter the elements of the 6array:");
```

```
        for (int i = 0; i < size; i++) {
            array[i] = scanner.nextInt();
        }

        bubbleSort(array);

        System.out.println("Sorted array:");
        for (int i = 0; i < size; i++) {
            System.out.print(array[i] + " ");
        }

        scanner.close();
    }

    public static void bubbleSort(int[] array) {
        int n = array.length;
        for (int i = 0; i < n - 1; i++) {
            for (int j = 0; j < n - 1 - i; j++) {
                if (array[j] > array[j + 1]) {
                    int temp = array[j];
                    array[j] = array[j + 1];
                    array[j + 1] = temp;
                }
            }
        }
}
}
```

```
PS C:\Users\anupa>  & 'C:\Program
Enter the size of the array: 5
Enter the elements of the array:
32
4
53
545
332
Sorted array:
4 32 53 332 545
```