Q1. Write a program to convert an integer to an Integer object.

(a) Autoboxing

(b) Using Constructor

Solution :-

```
public class Q1 {

public static void main(String[] args) {

autoboxingInteger(10);

constructorInteger(10);

}

static void autoboxingInteger(int num) {
   Integer x= num;
   System.out.println("Autoboxing: " + x);
}

static void constructorInteger(int num) {
   Integer y= new Integer(num);
   System.out.println("Using Constructor: " + y);
}


}
```

Q2. Write a program to convert a float to a Float object.

(a) Autoboxing (b) Using Constructor

Solution :-

```
public class Q2 {

public static void main(String[] args)

{

autoboxingFloat(5.5f);

constructorFloat(5.5f);
```

```
}

static void autoboxingFloat(float  num)

{
   Float  f= num;
   System.out.println("Autoboxing:  " + f);
}

static void constructorFloat(float  num)

{
   Float i= new Float(num);
   System.out.println("Using  Constructor:  " + i);
}


}
```

Q3. Write a program to convert a double to a Double object.

(a) Autoboxing (b) Using Constructor

Solution :-

```
public class Q3 {

 public static void main(String[] args)

{

 autoboxingDouble(10.5);

 constructorDouble(10.5);

 }

static void autoboxingDouble(double  num) {
   Double doubleObj  = num;
   System.out.println("Autoboxing:  " + doubleObj);
}

static void constructorDouble(double  num) {
   Double doubleObj  = new Double(num);
   System.out.println("Using  Constructor:  " + doubleObj);
}
```

```
}
```

Q4. Write a program to convert a boolean to a Boolean object.

(a) Autoboxing (b) Using Constructor

Solution :-

```
public class Q4 {

public static void main(String[] args)

{

autoboxingBoolean(true);

constructorBoolean(true);

 }

static void autoboxingBoolean(boolean flag) {
   Boolean boolObj = flag;
   System.out.println("Autoboxing: " + boolObj);
}

static void constructorBoolean(boolean flag) {
   Boolean boolObj = new Boolean(flag);
   System.out.println("Using Constructor: " + boolObj);
}


}
```

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

Solution :-

```
public class Q5

{

public static void main(String[] args)

 {

stringToInteger("123");

 }
```

```
static void stringToInteger(String  str) {
   Integer intObj = Integer.valueOf(str);
   System.out.println("Integer  object: " + intObj);
}


}
```

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

Solution :-

```
public class Q6 {

 public static void main(String[] args) {

 stringToFloat("12.34");



 }

static void stringToFloat(String  str) {
   Float floatObj = Float.valueOf(str);
   System.out.println("Float  object: " + floatObj);
}


}
```

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

Solution :-

```
public class Q7 {

 public static void main(String[] args) {

stringToDouble("45.67");

 }

static void stringToDouble(String  str) {
   Double doubleObj  = Double.valueOf(str);
   System.out.println("Double  object: " + doubleObj);
}
```

```
}
```

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.

Solution :-

```
public class Q8 {

public static void main(String[] args) {

stringToBoolean("true");

}

static void stringToBoolean(String str) {
   Boolean boolObj = Boolean.valueOf(str);
   System.out.println("Boolean object: " + boolObj);
}


}
```

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.

Solution :-

```
public class Q9 {

public static void main(String[] args) {

 convertUsingValueOf(10, 5.5f, 20.5, true);

 }

static void convertUsingValueOf(int num, float fl, double dbl, boolean flag)

{
   Integer intObj = Integer.valueOf(num);
   Float floatObj = Float.valueOf(fl);
   Double doubleObj = Double.valueOf(dbl);
   Boolean boolObj = Boolean.valueOf(flag);


   System.out.println("Integer: " + intObj);
   System.out.println("Float: " + floatObj);
   System.out.println("Double: " + doubleObj);
   System.out.println("Boolean: " + boolObj);
```

```
}
```

```
}
```

Q10. Write a program to design a simple calculator (only +,-,,/ operations). *The calculator works as follows:*
Input: "123+345"

Output: Sum=468

*Input: "*510"

Output: mul=50

Explain the concept of converting object type to base type.

Explain the method used to do so.

Solution :-

```
import java.util.Scanner;

public class Q10 {

 public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter an operation (e.g., 123+345): ");

String input = scanner.nextLine();

simpleCalculator(input);

}

static void simpleCalculator(String input) {
   if (input.contains("+")) {
      String[] parts = input.split("\\+");
      int result = Integer.parseInt(parts[0]) + Integer.parseInt(parts[1]);
      System.out.println("Sum = " + result);
   } else if (input.contains("-")) {
      String[] parts = input.split("-");
      int result = Integer.parseInt(parts[0]) - Integer.parseInt(parts[1]);
      System.out.println("Difference = " + result);
   } else if (input.contains("*")) {
      String[] parts = input.split("\\*");
      int result = Integer.parseInt(parts[0]) * Integer.parseInt(parts[1]);
```

```
        System.out.println("Product  = " + result);
    } else if (input.contains("/")) {
        String[] parts = input.split("/");
        int result = Integer.parseInt(parts[0])  / Integer.parseInt(parts[1]);
        System.out.println("Quotient  = " + result);
    } else {
        System.out.println("Invalid  operation.");
    }
}


}
```

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

Solution :-

```
public class Q11 {

 public static void main(String[] args) {

 stringToDoubleBaseType("45.67");

 }

static void stringToDoubleBaseType(String str) {
    double dbl = Double.parseDouble(str);
    System.out.println("Double  base type: " + dbl);
}


}
```

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

Explain the following concepts:

• Arrays • Conditional Statements • Loops

Solution :-

```
public class Q12 {

public static void main(String[] args) {

stringToIntBaseType("123");

}
```

```
static void stringToIntBaseType(String str) {
   int num = Integer.parseInt(str);
   System.out.println("Int base type: " + num);
}


}
```

Q13. Write a program that prompts the user to input a positive integer. It should then print the multiplication table of that number.

Solution :-

```
public class Q13 {

public static void main(String[] args) {

 printMultiplicationTable(5);

 }



static void printMultiplicationTable(int num) {
   if (num <= 0) {
      System.out.println("Please enter a positive integer.");
      return;
   }
   for (int i = 1; i <= 10; i++) {
      System.out.println(num + " x " + i + " = " + (num * i));
   }
}


}
```

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

Solution :-

```
public class Q14 {

public static void main(String[] args) {

calculateHCFAndLCM(12, 18);

}
```

```
static void calculateHCFAndLCM(int a, int b) {
   int hcf = findHCF(a, b);
   int lcm = (a * b) / hcf;
   System.out.println("HCF: " + hcf);
   System.out.println("LCM: " + lcm);
}

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


}
```

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

Solution :-

```
public class Q15 {

public static void main(String[] args) {

calculateSeriesSum(5);

}

static void calculateSeriesSum(int n) {
   if (n <= 0) {
      System.out.println("n must be greater than 0.");
      return;
   }
   double sum = 0.0;
   for (int i = 1; i <= n; i++) {
      sum += 1.0 / i;
   }
   System.out.println("Sum of series: " + sum);
}


}
```

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

Solution :-

```
import java.util.Scanner;

public class Q16 {

 public static void main(String[] args) {

findLargestAndSmallest();

 }

static void findLargestAndSmallest() {
   Scanner scanner = new Scanner(System.in);
   int largest = Integer.MIN_VALUE;

  int smallest = Integer.MAX_VALUE;
   String choice;


   do {
      System.out.print("Enter a number: ");
      int num = scanner.nextInt();
      if (num > largest) largest = num;
      if (num < smallest) smallest = num;


      System.out.print("Do you want to continue (yes/no)? ");
      choice = scanner.next();
   } while (choice.equalsIgnoreCase("yes"));


   System.out.println("Largest: " + largest);
   System.out.println("Smallest: " + smallest);
}


}
```

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

Solution :-

```
public class Q17 {

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

```
 int[] arr = {12, 3, 7, 19, 5};

findMinMax(arr);

}

static void findMinMax(int[] arr) {
   int min = arr[0], max = arr[0];
   for (int num : arr) {
      if (num < min) min = num;
      if (num > max) max = num;
   }
   System.out.println("Minimum:  " + min);
   System.out.println("Maximum:  " + max);
}


}
```

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

Solution :-

```
import java.util.Arrays;

public class Q18 {

 public static void main(String[] args) {

 int[] arr = {12, 3, 7, 19, 5};

 findKthLargestAndSmallest(arr, 2);

 }

static void findKthLargestAndSmallest(int[] arr, int k) {
   Arrays.sort(arr);
   int kthSmallest = arr[k - 1];
   int kthLargest = arr[arr.length - k];
   System.out.println("Kth  Smallest: " + kthSmallest);
   System.out.println("Kth  Largest: " + kthLargest);
}


}
```

Q19. Write a java program to reverse the given array. (Without using Library function).

Solution :-

```
public class Q19 {

 public static void main(String[] args) {

int[] arr = {1, 2, 3, 4, 5};

reverseArray(arr);

}

static void reverseArray(int[] arr) {
   for (int i = 0; i < arr.length / 2; i++) {
      int temp = arr[i];
      arr[i] = arr[arr.length - 1 - i];
      arr[arr.length - 1 - i] = temp;
   }
   System.out.print("Reversed Array: ");
   for (int num : arr) {
      System.out.print(num + " ");
   }
}


}
```

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

Solution :-

```
public class Q20 {

 public static void main(String[] args) {

 int[] arr = {12, 3, 7, 19, 5}; sortArray(arr);

 }

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

```
        }
    }
    System.out.print("Sorted  Array: ");
    for (int num : arr) {
        System.out.print(num  + " ");
    }
}


}
```