**Java 1**

**Basics assignment**

//1. How to create a class, object, method and its signature.

package Intern;

public class CreatingClassObjectMethod

{

//created a method using methodName()

void isMethod() {

//fields are used to store data

String a = "This is a Method";

System.out.println(a);

}

public static void main(String[] args) {

// Created an object of Basics\_01

CreatingClassObjectMethod obj = new CreatingClassObjectMethod();

// Calling the method

obj.isMethod();

}

}

//2. Write a program to print your name.

package Intern;

public class Printing\_Name\_1\_2

{

public static void main(String[] args) {

String name = "Souma Paul";

System.out.println("My name is " + name);

}

}

//3. Write a program for a Single line comment, multi-line and documentation comments.

package Intern;

public class Comments

{

public static void main(String[] args)

{

System.out.println("// This is a Single line comment");

System.out.println("/\* This is a Multi-line comment \*/");

System.out.println("/\*\* This is a Documentation comment \*/");

}

}

//4. Define variables for different Data Types int, Boolean, char, float,double and print on the Console

package Intern;

public class DataTypes {

public static void main(String[] args) {

int i = 111; // Default size is 4 byte

float f = 11.1f; // Default size is 4 byte

double d = 111.1111; // Default size is 8 byte

char c = 'C'; // Default size is 2 byte

boolean b = true; // Default size is 1 byte

System.out.println("This is an Integer " + i);

System.out.println("This is a Float " + f);

System.out.println("This is a Double " + d);

System.out.println("This is a Char " + c);

System.out.println("This is a Boolean " + b);

}

}

//5.Define the local and Global variables with the same name and print both variables and understand the scope of the variables

package Intern;

public class LocalGlobalVariable

{

// Instance variable is declared inside the class but outside the body of the method.

int a = 11;

void localVariable() {

//Local variables are declared in methods, constructors, or blocks.

int a = 22;

System.out.println("Local variable a : " + a);

}

public static void main(String[] args)

{

LocalGlobalVariable obj = new LocalGlobalVariable();

System.out.println("Instance variable a : " + obj.a);

//calling method()

obj.localVariable();

}

}

//6. Write a function to print your name and call the function from main method.

package Intern;

public class CallingFunction

{

static void myMethod() {

System.out.println("My Name is 'Souma Paul'");

}

public static void main(String[] args) {

myMethod();

}

}

**Operators**

//1. Write a function for arithmetic operators(+,-,\*,/).

package Intern;

public class Arithematic

{

static void addition(int a, int b) {

int add = a + b;

System.out.println("Addition of a + b = " + add);

}

static void subtraction(int a, int b) {

int sub = a - b;

System.out.println("Subtraction of a - b = " + sub);

}

static void multiplication(int a, int b) {

int mul = a \* b;

System.out.println("Multiplication of a \* b = " + mul);

}

static void division(int a, int b) {

int div = a / b;

System.out.println("Division of a / b = " + div);

}

public static void main(String[] args) {

int a = 10;

int b = 2;

//calling methods

addition(a, b);

subtraction(a, b);

multiplication(a, b);

division(a, b);

}

}

//2. Write a method for increment and decrement operators(++, --)

package Intern;

public class Increment\_Decrement

{

/\* Increment Operator : ++ (++a or a++)

It increments the value of a variable by 1. \*/

static void preIncrement(int a, int b) {

int d; //First the value of a is incremented to 11

d = b + (++a); //Then b is added to 11 to get 16

System.out.println("Values after Pre-Increment a,b : " + a + "," + d);//a=11,b=16

}

static void postIncrement(int a, int b) {

int d; //first the value of a is added to b to get 15

d = b + (a++); //Then after execution, a is incremented to 11

System.out.println("Values after Post-Increment a,b : " + a + "," + d);//a=11,b=15

}

/\* Decrement Operator : -- (--a or a--)

It decrements the value of a variable by 1. \*/

static void preDecrement(int a, int b) {

int d; //First the value of a is decremented to 9

d = b + (--a); //Then b is added to 9 to get 14

System.out.println("Values after Pre-Decrement a,b : " + a + "," + d);//a=9,b=14

}

static void postDecrement(int a, int b) {

int d; //first the value of a is added to b to get 15

d = b + (a--); //Then after execution, a is Decremented to 9

System.out.println("Values after Post-Decrement a,b : " + a + "," + d);//a=9,b=15

}

public static void main(String[] args) {

int a = 10;

int b = 5;

preIncrement(a, b);

postIncrement(a, b);

preDecrement(a, b);

postDecrement(a, b);

}

}

//3. Program to equal operator and not equal operators

//4. Write a program to find the two numbers equal or not.

package Intern;

import java.util.Scanner;

public class Equal\_NotEqual

{

public static void main(String[] args) {

Scanner num = new Scanner(System.in);

System.out.print("Enter first number : ");

// "nextInt()" scans the next token of the input as an Int.

int a = num.nextInt();

System.out.print("Enter second number : ");

int b = num.nextInt();

//equal operator (==)

if (a == b) {

System.out.println("Both are numbers equal");

}

//not equal operator (!=)

else if (a != b) {

System.out.println("Both are numbers different");

}

}

}

//5. Programs on Logical AND,OR operator and Logical NOT

package Intern;

public class Logical

{

public static void main(String[] args) {

int a = 15;

int b = 10;

int c = 5;

System.out.println(a > b && a > c);

System.out.println(a < b && a < c);

System.out.println(a > b && a < c);

System.out.println(a > b || a > c);

System.out.println(a < b || a < c);

System.out.println(a < b || a > c);

System.out.println(!(a > b));

System.out.println(!(a < b));

}

}

//6. Program for relational operators (<,<==, >, >==)

package Intern;

public class Relaional

{

public static void main(String[] args) {

int a = 15;

int b = 10;

System.out.println(a < b);

System.out.println(a > b);

System.out.println(a <= b);

System.out.println(a >= b);

}

}

//7. Print the smaller and larger number

package Intern;

public class LargerSmallerNumber

{

public static void main(String[] args) {

int a = 5;

int b = 10;

int min = (a<b)?a:b;

int max = (a>b)?a:b;

System.out.println("Smaller Number is " + min);

System.out.println("Larger Number is " + max);

if (a > b) {

System.out.println("Larger Number is " + a);

} else {

System.out.println("Smaller Number is " + a);

}

if (b > a) {

System.out.println("Larger Number is " + b);

} else {

System.out.println("Smaller Number is " + b);

}

}

}

**Loops**

//1. Write a program to print “Bright IT Career” ten times using for loop

package Intern;

public class Bright\_IT\_Career

{

public static void main(String[] args) {

for (int i = 1; i <= 10; i++) {

System.out.println(i + ".Bright IT Career");

}

}

}

//2. Write a java program to print 1 to 20 numbers using the while loop.

package Intern;

public class Printing\_OnetoTwenty

{

public static void main(String[] args) {

int i = 1;

//In while loop we separately need to initialize and increment the variable

//loop executes from 1 to 20

while (i <= 20) {

System.out.print(i + " ");

//Every time the loop body is executed, this expression increments

i++;

}

}

}

//3. Program to equal operator and not equal operators.

//4. Write a program to print the odd and even numbers.

package Intern;

import java.util.Scanner;

public class EvenAndOddNumber

{

static void evenNumbers(int n) {

System.out.println("These are Even Numbers from 0 to " + n);

//loop executes until the condition becomes false

for (int i = 1; i <= n; i++) {

if (i % 2 == 0) {

System.out.print(i + " ");

}

}

System.out.println(" ");

}

static void oddNumbers(int n) {

System.out.println("\nThese are Odd Numbers from 1 to " + n);

for (int i = 1; i <= n; i++) {

if (i % 2 != 0) {

System.out.print(i + " ");

}

}

}

public static void main(String[] args) {

int num;

Scanner sc = new Scanner(System.in);

System.out.print("Enter any Number : ");

//input stored in num

num = sc.nextInt();

//Even Numbers method

evenNumbers(num);

//Even Numbers method

oddNumbers(num);

}

}

//5. Write a program to print largest number among three numbers.

package Intern;

import java.util.Scanner;

public class LargestNumberAmongThree

{

public static void main(String[] args) {

int a, b, c;

Scanner num = new Scanner(System.in);

//inputs are stored in a,b,c.

System.out.print("Enter First Number : ");

a = num.nextInt();

System.out.print("Enter Second Number : ");

b = num.nextInt();

System.out.print("Enter Third Number : ");

c = num.nextInt();

//Executes if a is largest

if ((a > b) && (a > c)) {

System.out.println("The Largest Number is : " + a);

}

//Executes if b is largest

else if ((b > a) && (b > c)) {

System.out.println("The Largest Number is : " + b);

}

//Executes if a,b are not largest

else {

System.out.println("The Largest Number is : " + c);

}

}

}

//6. Write a program to print even number between 10 and 100 using while

package Intern;

public class EvenNumbers10\_100

{

public static void main(String[] args) {

System.out.println("The Even Numbers between 10 and 100 are : ");

int i = 10;

//loop executes from 10 to 100

while (i <= 100) {

System.out.println(i);

i += 2;

}

}

}

//7. Write a program to print 1 to 10 using the do-while loop statement.

package Intern;

public class PrintingDoWhile

{

public static void main(String[] args) {

int i = 1;

do {

System.out.print(i + " ");

i++;

}

while (i <= 10);

}

}

//8. Write a program to find Armstrong number or not.

package Intern;

import java.util.Scanner;

public class Armstrong

{

static boolean isArmstrong(int n) {

int r, result = 0;

//assigning n to a temp variable

int temp = n;

//loop executes when the condition is true

while (n != 0) {

r = n % 10;

result += (r \* r \* r);

n = n / 10;

}

return temp == result;

}

public static void main(String[] args) {

System.out.print("Enter a number : ");

//User Input stored in num

int num = new Scanner(System.in).nextInt();

//if(true)

if (isArmstrong(num)) {

System.out.println(num + " is an Armstrong number");

} else {

System.out.println(num + " is not an Armstrong number");

}

}

}

//9. Write a program to find the prime or not.

package Intern;

import java.util.Scanner;

class PrimeNumber

{

static void primeNumber(int n) {

//initially we set "isPrime" to false

boolean isPrime = false;

//Prime numbers are only divisible by 1 and the number itself.

for (int i = 2; i <= n / 2; ++i) {

if (n % i == 0) {

isPrime = true;

break;

}

}

//Executes if(not true)

if (!isPrime) {

System.out.println(n + " is a Prime Number");

} else {

System.out.println(n + " is not a Prime Number");

}

}

public static void main(String[] args) {

int num;

System.out.print("Enter a Number to check if its prime number: ");

//User Input stores in num

num = new Scanner(System.in).nextInt();

//calling method

primeNumber(num);

}

}

//10. Write a program to palindrome or not

package Intern;

import java.util.Scanner;

public class PalindromeNumber

{

static boolean palindromeNumber(int num) {

int r, sum = 0, temp;

//Copy number into a temporary variable and reverse it.

temp = num;

while (num > 0) {

r = num % 10; //getting remainder

sum = (sum \* 10) + r;

num = num / 10;

}

return temp == sum;

}

public static void main(String[] args) {

int num;

System.out.print("Enter a value : ");

num = new Scanner(System.in).nextInt();

//if(true)

if (palindromeNumber(num)) {

System.out.println(num + " is a Palindrome Number");

} else {

System.out.println(num + " is not a Palindrome Number");

}

}

}

//12. Print gender (Male/Female) program according to given M/F using switch.

package Intern;

import java.util.Scanner;

public class MaleFemaleSwitch

{

public static void main(String[] args) {

System.out.print("Enter a Character (M/F) : ");

Scanner sc = new Scanner(System.in);

char Gender = sc.next().charAt(0);

switch (Gender) {

case 'M':

System.out.println("Gender is Male");

break;

case 'F':

System.out.println("Gender is Female");

break;

}

}

}

//13. Program for multiple if else statement(The Largest number in 10,20 and 30)

package Intern;

public class MultipleIf\_ElseStatement

{

public static void main(String[] args) {

int a = 10, b = 20, c = 30;

// Executes if a is greater than b & c

if (a > b && a > c) {

System.out.println(a + " is the Largest Number");

}

// Executes if b is greater than a & c

else if (b > a && b > c) {

System.out.println(b + " is the Largest Number");

}

// Executes if both a & b are smaller than c

else {

System.out.println(c + " is the Largest Number");

}

}

}

**Arrays**

//1. Write a function to add integer values of an array

package Intern;

public class AddIntegerValue\_4\_1

{

static int arrSum(int[] arr) {

int sum = 0;

for (int i = 0; i < arr.length; i++)

sum = sum + arr[i];

return sum;

}

public static void main(String[] args) {

//declaration, instantiation and initialization

int[] arr = {10, 20, 30, 40, 50};

for (int i : arr)

System.out.print(i + " + ");

//passing array to method

System.out.print(" = " + arrSum(arr));

}

}

//2. Write a function to calculate the average value of an array of integers

package Intern;

public class CalculateAverageValue\_4\_2

{

//method to calculate the average value

//creating a method which receives an array as parameter

static void avgArray(int[] arr) {

int sum = 0;

//for-each loop

for (int i : arr) {

//first calculate the sum of all elements in the array and store in sum

sum = sum + i;

}

//we calculate the average by the formula (avg = sum of numbers/total count)

int average = sum / arr.length;

//Prints the average number

System.out.print("The Average value of array is " + average);

}

public static void main(String[] args) {

//declaring and initializing an array

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

//passing array to method to get average value

avgArray(arr);

}

}

//3. Write a program to find the index of an array element.

package Intern;

import java.util.\*;

public class FindIndex\_4\_3

{

//method to find the index of an array element.

//creating a method which receives an array and integer as parameter

static void arrIndex(int[] arr, int n) {

for (int i = 0; i < arr.length; i++)

//executes if given input matches

if (n == arr[i]) {

System.out.println(n + " is at index " + i);

return;

}

}

public static void main(String[] args) {

int index;

//declaring and initializing an array

int[] arr = {10, 20, 30, 40, 50, 60, 70};

System.out.println("arr = " + Arrays.toString(arr));

//user input

System.out.print("Select any value to find Index of array : ");

Scanner sc = new Scanner(System.in);

index = sc.nextByte();

//passing array and index to method

arrIndex(arr, index);

}

}

//4. Write a function to test if array contains a specific value

package Intern;

import java.util.\*;

public class ContainsSpecificValie\_4\_4

{

//method to test if array contains a specific value

//creating a method which receives an array and integer as parameters

static boolean contains(int[] arr, int n) {

//using for-each loop

for (int i : arr) {

//returns if given n value is in index

if (i == n) {

return true;

}

}

return false;

}

public static void main(String[] args) {

int n;

//declaring and initializing an array

int[] arr = {11, 22, 33, 44, 55};

System.out.print("Enter the value which should be searched : ");

Scanner sc = new Scanner(System.in);

n = sc.nextInt();

//passing array and user input to method

boolean hasValue = contains(arr, n);

//Executes if(true)

if (hasValue) {

System.out.println("Contains " + n + " in the array");

System.out.println(Arrays.toString(arr));

} else {

System.out.println("Does not Contains " + n + " in the array");

System.out.println(Arrays.toString(arr));

}

}

}

//5.Write a function to remove a specific element from an array

package Intern;

import java.util.\*;

public class RemoveSpecificElement\_4\_5

{

public static int[] removeElement(int[] arr, int index)

{

if (arr == null || index < 0 || index >= arr.length) {

return arr;

}

int[] anotherArray = new int[arr.length - 1];

for (int i = 0, k = 0; i < arr.length; i++) {

if (i == index) {

continue;

}

anotherArray[k++] = arr[i];

}

return anotherArray;

}

public static void main(String[] args) {

int[] arr = { 11, 22, 33, 44, 55 };

System.out.print("Select an index to remove a value from arr = " + Arrays.toString(arr) + ": ");

Scanner sc = new Scanner(System.in);

int index = sc.nextInt();

System.out.println("Array after removing Element at index " + index );

arr = removeElement(arr, index);

System.out.println("arr = " + Arrays.toString(arr));

}

}

//6. Write a function to copy an array to another array

package Intern;

import java.util.\*;

public class CopyArray\_4\_6

{

static void copyingArray(int[] arr) {

int[] copy = arr;

System.out.println("Array after copying to c = " + Arrays.toString(copy));

}

public static void main(String[] args) {

int n;

Scanner sc = new Scanner(System.in);

System.out.print("Enter the number of elements you want to store : ");

n = sc.nextInt();

System.out.println("Enter the Elements of the array ");

int[] my\_arr = new int[n];

for (int i = 0; i < n; i++) {

System.out.printf("my\_arr[%d] = ", i);

my\_arr[i] = sc.nextInt();

}

System.out.println("my\_arr = " + Arrays.toString(my\_arr));

copyingArray(my\_arr);

}

}

//7. Write a function to insert an element at a specific position in the array.

package Intern;

import java.util.\*;

public class InsertAtSpecificPosition\_4\_7

{

static void insertElement(int[] arr, int index, int v) {

for (int i = arr.length; i <= index; i--) {

arr[i] = arr[i - 1];

}

arr[index] = v;

}

public static void main(String[] args) {

int index, v;

int[] my\_arr = {11, 22, 33, 44, 55, 66, 77, 88, 99};

System.out.println("original Array : my\_arr = " + Arrays.toString(my\_arr));

Scanner sc = new Scanner(System.in);

System.out.print("Enter the index number : ");

index = sc.nextInt();

System.out.printf("Enter the value to insert at index my\_arr[%d] = ", index);

v = sc.nextInt();

insertElement(my\_arr, index, v);

System.out.println("Array after Inserting Element : ");

System.out.println("my\_arr = " + Arrays.toString(my\_arr));

}

}

//8. Write a function to find the minimum and maximum value of an array

package Intern;

import java.util.Arrays;

public class MinMaxValue\_4\_8

{

static int minValue(int[] arr) {

//int result = arr[0];

int min = arr[0];

//for each loop

for (int j : arr)

if (j < min)

min = j;

return min;

}

static int maxValue(int[] arr) {

// int result = arr[0];

int max = arr[0];

//for each loop

for (int j : arr)

if (j > max)

max = j;

return max;

}

public static void main(String[] args) {

//declaring and initializing an array

int[] my\_arr = {11, 22, 33, 44, 55, 66};

//printing array as string

System.out.println("my\_arr = " + Arrays.toString(my\_arr));

//passing array to method to get maximum value

System.out.println("The Maximum value = " + maxValue(my\_arr));

//passing array to method to get minimum value

System.out.println("The Minimum value = " + minValue(my\_arr));

}

}

//9. Write a function to reverse an array of integer values

package Intern;

import java.util.Arrays;

public class ReverseArray\_4\_9

{

static void reverseArray(int[] arr) {

int[] r\_arr = new int[arr.length];

int j = arr.length;

for (int i : arr) {

r\_arr[j - 1] = i;

j = j - 1;

}

System.out.println("Reversed Array : r\_arr = " + Arrays.toString(r\_arr));

}

public static void main(String[] args) {

//declaring and initializing an array

int[] my\_arr = {11, 22, 33, 44, 55};

//printing array as string

System.out.println("Original Array : my\_arr = " + Arrays.toString(my\_arr));

//passing array to method to reverse an array

reverseArray(my\_arr);

}

}

//10.Write a function to find the duplicate values of an array

package Intern;

import java.util.Arrays;

public class DuplicateValues\_4\_10

{

static void duplicateValues(int[] arr) {

System.out.println("Duplicate values : ");

for (int i = 0; i < arr.length - 1; i++) {

for (int j = i + 1; j < arr.length; j++) {

if ((arr[i] == arr[j] && (i != j))) {

System.out.print(arr[j] + " ");

}

}

}

}

public static void main(String[] args) {

//declaring and initializing an array

int[] my\_arr = {11, 22, 33, 44, 55, 22, 44, 33};

//printing array as string

System.out.println("my\_arr[] = " + Arrays.toString(my\_arr));

//passing array to method to get duplicate values

duplicateValues(my\_arr);

}

}

//11.Write a program to find the common values between two arrays

package Intern;

import java.util.Arrays;

public class CommonValueInTwoArray\_4\_11

{

static void commonValues(int[] arr1, int[] arr2)

{

for (int k : arr1)

{

for (int i : arr2)

{

if (k == i)

{

System.out.println("Common values : " + k);

}

}

}

}

public static void main(String[] args)

{

//declaring and initializing two arrays

int[] arr1 = {11, 22, 33, 44, 55};

int[] arr2 = {66, 55, 77, 11, 88};

System.out.println("arr1[] = " + Arrays.toString(arr1));

System.out.println("arr2[] = " + Arrays.toString(arr2));

//passing two arrays to method to get common values

commonValues(arr1, arr2);

}

}

//12. Write a method to remove duplicate elements from an array

//18. Write a program to remove the duplicate elements and return the new array

package Intern;

import java.util.Arrays;

public class RemoveDuplicateElements\_4\_12\_18

{

//method to remove duplicate elements from an array

//creating a method which receives an array and integer as parameters

static int removerDuplicate(int[] arr, int n) {

if (n == 0 || n == 1) {

return n;

}

// creating another array for only storing the unique elements

int[] temp = new int[n];

int j = 0;

for (int i = 0; i < n - 1; i++) {

if (arr[i] != arr[i + 1]) {

temp[j++] = arr[i];

}

}

temp[j++] = arr[n - 1];

// Changing the original array

for (int i = 0; i < j; i++) {

arr[i] = temp[i];

}

return j;

}

public static void main(String[] args) {

//declaring and initializing an array

int[] arr = {11, 22, 22, 33, 44, 44, 55, 66, 66};

// Printing array as string

System.out.println("arr[] = " + Arrays.toString(arr));

int n = arr.length;

//passing array and array length to method

n = removerDuplicate(arr, n);

// Printing The new array elements

System.out.println("Array after removing duplicate values : ");

for (int i = 0; i < n; i++)

System.out.print(arr[i] + " ");

}

}

//13. Write a method to find the second-largest number in an array

package Intern;

import java.util.Arrays;

public class SecondLargestNumber\_4\_13

{

static void secondLargest(int[] arr) {

int temp;

//outer loop

for (int i = 0; i < arr.length; i++) {

//inner loop

for (int j = i + 1; j < arr.length; j++) {

if (arr[i] > arr[j]) {

temp = arr[i];

arr[i] = arr[j];

arr[j] = temp;

}

}

}

System.out.println("The second largest number in Array : " + arr[arr.length - 2]);

}

public static void main(String[] args) {

//declaring and initializing an array

int[] my\_arr = {11, 22, 33, 44, 55};

System.out.println("arr[] = " + Arrays.toString(my\_arr));

//passing array to method

secondLargest(my\_arr);

}

}

//15. Write a method to find number of even number and odd numbers in an array

package Intern;

import java.util.Arrays;

public class OddEvenNumber\_4\_15

{

static void evenNumber(int[] arr) {

System.out.print("Even numbers in array : ");

for (int i : arr) {

if (i % 2 == 0) {

System.out.print(i + " ");

}

}

}

static void oddNumber(int[] arr) {

System.out.print("\nOdd numbers in array : ");

//for each loop

for (int j : arr) {

if (j % 2 != 0) {

System.out.print(j + " ");

}

}

}

public static void main(String[] args) {

//declaring and initializing an array

int[] arr = {11, 22, 33, 44, 55};

System.out.println("a[] = " + Arrays.toString(arr));

//passing array to method to get even numbers

evenNumber(arr);

//passing array to method to get odd numbers

oddNumber(arr);

}

}

//16. Write a function to get the difference of largest and smallest value

package Intern;

import java.util.Arrays;

public class MaxMinDifference\_4\_16

{

static void difference\_Min\_Max(int[] arr) {

int max = arr[0];

int min = arr[0];

int difference;

for (int i = 1; i < arr.length; i++) {

if (arr[i] > max) {

max = arr[i];

} else if (arr[i] < min) {

min = arr[i];

}

}

difference = max - min;

//prints largest and smallest values

System.out.printf("Maximum value : %d , Minimum value : %d ", max, min);

//prints difference of largest and smallest value

System.out.println("\nDifference of largest and smallest values : " + difference);

}

public static void main(String[] args) {

//declaring and initializing an array

int[] my\_arr = {11, 22, 33, 44, 55};

System.out.println("my\_arr[] = " + Arrays.toString(my\_arr));

//passing array to method to get difference

difference\_Min\_Max(my\_arr);

}

}

//17. Write a method to verify if the array contains two specified elements(12,23)

package Intern;

import java.util.\*;

public class ContainSpecificElement\_4\_17

{

static void contains(int[] arr, int n1,int n2) {

boolean num1 = false;

boolean num2 = false;

for (int i : arr) {

if (i == n1) {

num1 = true;

}

if (i==n2){

num2 = true;

}

}

if (num1) {

System.out.printf("Contains %d in the array", n1);

} else {

System.out.printf("\nDoesn't Contain %d in the array", n1);

}

if (num2) {

System.out.printf("\nContains %d in the array", n2);

} else {

System.out.printf("\nDoesn't Contain %d in the array", n2);

}

System.out.println("\nmy\_arr[] = " + Arrays.toString(arr));

}

public static void main(String[] args) {

int[] my\_arr = {13, 22, 12, 30, 47, 23, 65};

Scanner sc = new Scanner(System.in);

System.out.print("Enter value to verify (n1 & n2): ");

int n1 = sc.nextInt();

int n2 = sc.nextInt();

contains(my\_arr, n1,n2);

}

}

//19. Write a function to find the missing number of sorted array of 1 to 100

package Intern;

import java.util.Arrays;

public class MissingNumbers\_4\_19

{

static void missingNumber(int[] arr) {

Arrays.sort(arr);

System.out.println("a[] = " + Arrays.toString(arr));

int j = 0;

for (int i = 1; i < 100; i++) {

if (j < arr.length && i == arr[j])

j++;

else

System.out.print(i + " ");

}

}

public static void main(String[] args) {

//declaring and initializing an array

int[] my\_arr = {7, 22, 36, 45, 52, 63, 77, 89, 99};

//passing array to method

missingNumber(my\_arr);

}

}

**Static**

//1. Write a class with 2 static variables, 2 Instance variables, 2 static methods, 2 instance

//methods and a main method.

//2. Print instance variables in static methods

//3. Print static variables in Instance methods

//4. Call instance methods in static methods

//5. Call static methods in instance methods

//6. Print all the static, instance variables in main method

//7. Call static methods and instance methods in main method

package Intern;

public class Static\_5

{

// Static variables

static int sv1 = 11;

static int sv2 = 22;

// Instance variables

int iv1 = 33;

int iv2 = 44;

// 2. staticMethod1 Prints Instance variables in Static method 1

static void staticMethod1() {

//creating obj to access instance variables

Static\_5 obj = new Static\_5();

//printing Instance variables

System.out.println("Instance variables: " + obj.iv1 + ", " + obj.iv2);

}

// 3. instanceMethod1 Prints Static variables in Instance method 1

void instanceMethod1() {

//printing Static variables

System.out.println("Static variables: " + sv1 + ", " + sv2);

}

// 4. staticMethod2 Calls Instance method 1 in Static method 2

static void staticMethod2() {

//we can not call the instance methods directly,so we create an object

Static\_5 obj = new Static\_5();

obj.instanceMethod1();

}

// 5. instanceMethod2 Call Static methods in Instance method 2

void instanceMethod2() {

//static methods can be called without creating an object of class

staticMethod1();

}

//main method

public static void main(String[] args) {

Static\_5 stc = new Static\_5();

// 8. Prints all the static, instance variables in main method

System.out.println("Static variables: " + sv1 + ", " + sv2);

System.out.println("Instance variables: " + stc.iv1 + ", " + stc.iv2);

// 7.Calls static methods and instance methods in main method

//static methods

staticMethod1();

staticMethod2();

//instance methods

stc.instanceMethod1();

stc.instanceMethod2();

}

}

**Strings**

//1. Different ways creating a string

package Intern;

public class CreatingString\_6\_1

{

public static void main(String[] args)

{

String s1 = "This is a string";

System.out.println(s1);

String s2 = new String("Creating a string object and placed in memory \"Heap\"");

System.out.println(s2);

}

}

//2. Concatenating two strings using + operator

package Intern;

public class StringOperator\_6\_2

{

public static void main(String[] args)

{

String sc1 = "This String is ";

String sc2 = "Concatenated";

String con = sc1 + sc2;

System.out.println(con);

}

}

// 3. Finding the length of the string

package Intern;

public class LengthOfString\_6\_3

{

public static void main(String[] args)

{

String sl = "String Length";

int len = sl.length();

System.out.println("String Length : " + len);

}

}

// 4. Extract a string using Substring

package Intern;

public class ExtractAString\_6\_4

{

public static void main(String[] args)

{

String es = "Extracting string";

String sub = es.substring(2, 10);

System.out.println("Extracted string : " + sub);

}

}

// 5. Searching in strings using indexOf()

package Intern;

public class SearchingInString\_6\_5

{

public static void main(String[] args)

{

String si = "Searching index";

int i1 = si.indexOf("index");

int i2 = si.indexOf("h", 3);

System.out.println("At Index : " + i1);

System.out.println("At Index : " + i2);

}

}

// 6. Matching a String Against a Regular Expression With matches()

package Intern;

public class MatchingAString\_6\_6

{

public static void main(String[] args)

{

String ms = "Matching a String";

// Testing if regex is present or not

boolean match = ms.matches("(.\*)String(.\*)");

//Boolean value, returns true if matches else false

System.out.println("Matches : " + match);

}

}

//7.Comparing strings using the methods equals()

//8 equalsIgnoreCase(),startsWith(), endsWith() and compareTo()

package Intern;

public class ComparingString\_6\_7\_8

{

public static void main(String[] args)

{

String cs1 = "Comparing strings";

String cs2 = "Comparing strings";

boolean e = cs1.equals(cs2);

System.out.println("Equal : " + e);

boolean eic = cs1.equalsIgnoreCase(cs2);

System.out.println("Equal(ignore case) : " + eic);

boolean sw = cs1.startsWith("Comp");

System.out.println("Starts with : " + sw);

boolean ew = cs1.endsWith("ings");

System.out.println("Ends with : " + ew);

int ct = cs1.compareTo(cs2);

System.out.println("Compared : " + ct);

}

}

// 9. Trimming strings with trim()

package Intern;

public class TrimmingString\_6\_9

{

public static void main(String[] args)

{

String ts = " Trimming String ";

//trim method() Removes leading and trailing spaces

String trm = ts.trim();

System.out.println("Trimmed : " + trm);

}

}

// 10. Replacing characters in strings with replace()

package Intern;

public class ReplacingString\_6\_10

{

public static void main(String[] args)

{

String rs = "Replacing string";

//replace() method, replaces all occurrences of 'g' to 'n'

String rpl = rs.replace("g", "n");

System.out.println("Replaced : " + rpl);

}

}

// 11. Splitting strings with split()

package Intern;

public class SplittingString\_6\_11

{

public static void main(String[] args)

{

String ss = "Splitting String";

//split() method breaks a given string around matches

String[] spl = ss.split(" "); //splits space

for (String i : spl) {

System.out.println("Splitted : " + i);

}

}

}

// 12. Converting Numbers to Strings with valueOf()

package Intern;

public class ConvertingNumberToString\_6\_12

{

public static void main(String[] args)

{

int ns = 11;

//valueOf() method converts different types of values into string.

String nTs = String.valueOf(ns);

System.out.println("Converted Num to Str : " + nTs + 22);

}

}

// 13. Converting integer objects to Strings

package Intern;

public class ConvertingIntegerToString\_6\_13

{

public static void main(String[] args)

{

int is = 11;

//Integer.toString() method converts int to str

String iTs = Integer.toString(is);

System.out.println("Converted int to str : " + iTs + 33);

}

}

// 14. Converting to uppercase and lowercase

package Intern;

public class UpperandLowercaseString\_6\_14

{

public static void main(String[] args)

{

String a = "upper case";

String b = "LOWER CASE";

//toUpperCase() method converts lower to upper case

String c = a.toUpperCase();

//toLowerCase() method converts upper to lower case

String d = b.toLowerCase();

System.out.println("Converted to upper case : " + c);

System.out.println("Converted to lower case : " + d);

}

}

**Inheritance**

//1. A, B and C are classes

//2. A is a super class. B is a subclass of A. C is a subclass of B.

//3. Create three methods in each class, 2 methods are specific to each class and third

//method (override method) should be in all three Classes A, B and C

//4. Create a class with main method. Create an object for each class A, B and C in main

//method and call every method of each class using its own object/instance.

//5. Call an overridden method with super class reference to B and C class’s objects

//6. Runtime Polymorphism with Data Members/Instance variables, Repeat the above

//process only for data member

package Intern;

//super class

class A {

int n = 11;

void methodA1() {

System.out.println("This is Class A Method 1");

}

void methodA2() {

System.out.println("This is Class A Method 2");

}

void method3() {

System.out.println("This is override method - Class A");

}

}

//subclass of A

class B extends A {

int n = 22;

void methodB1() {

System.out.println("This is Class B Method 1");

}

void methodB2() {

System.out.println("This is Class B Method 2");

}

@Override //override method

void method3() {

System.out.println("This is override method - Class B");

}

}

//subclass of B

class C extends B {

int n = 33;

void methodC1() {

System.out.println("This is Class C Method 1");

}

void methodC2() {

System.out.println("This is Class C Method 2");

}

@Override //override method

void method3() {

System.out.println("This is override method - Class C");

}

}

//class with main method

public class Inheritance\_7

{

public static void main(String[] args) {

//calling every method of each class using its own object/instance

//object for class A

A a = new A();

a.methodA1();

a.methodA2();

a.method3();

//object for class B

B b = new B();

b.methodB1();

b.methodB2();

b.method3();

//object for class C

C c = new C();

c.methodC1();

c.methodC2();

c.method3();

//Calling an overridden method with super class reference

A orm;

//upcasting

orm = new B();

orm.method3();

//upcasting

orm = new C();

orm.method3();

//Runtime Polymorphism with Data Members

A rtp;

rtp = new A();

System.out.println(rtp.n);

rtp = new B();

System.out.println(rtp.n);

rtp = new C();

System.out.println(rtp.n);

}

}

**Access Modifiers**

//1. Create a class with PRIVATE fields, private method and a main method. Print the fields

//in main method. Call the private method in main method.

//Create a subclass and try to access the private fields and methods from subclass

package Intern;

public class PrivateFieldsMethods\_8\_1

{

//private fields

private String name = "Souma";

private int age = 20;

//private method

private void pvtMethod() {

System.out.println("My Name is " + name + " and my age is " + age);

}

//main method

public static void main(String[] args) {

PrivateFieldsMethods\_8\_1 obj = new PrivateFieldsMethods\_8\_1();

//Printing the fields in main method

System.out.println(obj.age);

System.out.println(obj.name);

//Calling the private method in main method

obj.pvtMethod();

}

}

//2. Create a class with DEFAULT fields and methods. Access these fields and methods

//from any other class in the same package

package Intern;

//class with default fields and methods

class DefaultClass\_02 {

//Default fields

int myAge;

String myName;

//Default method

void defaultMethod() {

System.out.println("My name is " + myName + " and my age is " + myAge);

}

}

//Accessing default fields and method from other class in the same package

public class DefaultClassFieldsMethod\_8\_2

{

public static void main(String[] args) {

//Creating object of DefaultClass\_02.

DefaultClass\_02 obj = new DefaultClass\_02();

//Accessing default fields

obj.myAge = 20;

obj.myName = "Souma";

//calling default method

obj.defaultMethod();

}

}

//3. Also, Access the PROTECTED fields and methods from child class located

//in a different package

//Access the PROTECTED fields and methods from any class in different package

package Intern;

//importing different package

import Intern.ProtectedClassFieldsMethod\_8\_3;

//Accessing the PROTECTED fields and methods from child class

public class AccessingProtectedFieldsMethod\_8\_3 extends ProtectedClassFieldsMethod\_8\_3

{

public static void main(String[] args) {

//Creating object of AccessingProtectedFieldsMethod

AccessingProtectedFieldsMethod\_8\_3 sub = new AccessingProtectedFieldsMethod\_8\_3();

//Accessing protected field

sub.name = "Protected Method in SubClass";

//Accessing protected method

sub.protectedMethod();

}

}

//3. Create a class with PROTECTED fields and methods. Access these fields and methods

//from any other class in the same package.

package Intern;

public class ProtectedClassFieldsMethod\_8\_3

{

//Protected field

protected String name;

//Protected method

protected void protectedMethod() {

System.out.println("This is a " + name);

}

}

//Accessing protected fields and methods from other class in the same package

class protectedClass\_03 {

public static void main(String[] args) {

//Creating object of ProtectedClassFieldsMethod class.

ProtectedClassFieldsMethod\_8\_3 pc = new ProtectedClassFieldsMethod\_8\_3();

//Accessing protected field

pc.name = "Protected Method";

//Accessing protected method

pc.protectedMethod();

}

}

//4. Create a class with PUBLIC fields and methods.

//Access the public methods and fields from any class in the same package or different package

package Intern;

//class with public fields and method

class PublicClass\_04 {

//public fields

public String pName = "Public";

//public method

public void publicMethod() {

System.out.println("This is " + pName);

}

}

//Accessing the public methods and fields from other class in the same package

public class PublicClassFieldsMethod\_8\_4

{

public static void main(String[] args)

{

//Creating object of PublicClass\_04.

PublicClass\_04 pub = new PublicClass\_04();

//Accessing public fields

pub.pName = "Public Method";

//Accessing public method

pub.publicMethod();

}

}