**DSA PROJECT**

**Question no. 1**

#include<stdio.h>

int main() {

double first, second, temp;

printf("Enter first number: ");

scanf("%lf", &first);

printf("Enter second number: ");

scanf("%lf", &second);

// value of first is assigned to temp

temp = first;

// value of second is assigned to first

first = second;

// value of temp (initial value of first) is assigned to second

second = temp;

// %.2lf displays number up to 2 decimal points

printf("\nAfter swapping, first number = %.2lf\n", first);

printf("After swapping, second number = %.2lf", second);

return 0;

}

Output

Enter first number: 1.20

Enter second number: 2.45

After swapping, first number = 2.45

After swapping, second number = 1.20

**Question no. 2**

#include <stdio.h>

int main() {

double n1, n2, n3;

printf("Enter three different numbers: ");

scanf("%lf %lf %lf", &n1, &n2, &n3);

// if n1 is greater than both n2 and n3, n1 is the largest

if (n1 >= n2 && n1 >= n3)

printf("%.2f is the largest number.", n1);

// if n2 is greater than both n1 and n3, n2 is the largest

if (n2 >= n1 && n2 >= n3)

printf("%.2f is the largest number.", n2);

// if n3 is greater than both n1 and n2, n3 is the largest

if (n3 >= n1 && n3 >= n2)

printf("%.2f is the largest number.", n3);

return 0;

}

Output

Enter three numbers: -4.5

3.9

5.6

5.60 is the largest number.

**Question no.3**

#include <stdio.h>

int main() {

int year;

printf("Enter a year: ");

scanf("%d", &year);

// leap year if perfectly divisible by 400

if (year % 400 == 0) {

printf("%d is a leap year.", year);

}

// not a leap year if divisible by 100

// but not divisible by 400

else if (year % 100 == 0) {

printf("%d is not a leap year.", year);

}

// leap year if not divisible by 100

// but divisible by 4

else if (year % 4 == 0) {

printf("%d is a leap year.", year);

}

// all other years are not leap years

else {

printf("%d is not a leap year.", year);

}

return 0;

}

Output 1

Enter a year: 1900

1900 is not a leap year.

Output 2

Enter a year: 2012

2012 is a leap year.

**Question no.4**

#include <stdio.h>

int main() {

int i, n;

// initialize first and second terms

int t1 = 0, t2 = 1;

// initialize the next term (3rd term)

int nextTerm = t1 + t2;

// get no. of terms from user

printf("Enter the number of terms: ");

scanf("%d", &n);

// print the first two terms t1 and t2

printf("Fibonacci Series: %d, %d, ", t1, t2);

// print 3rd to nth terms

for (i = 3; i <= n; ++i) {

printf("%d, ", nextTerm);

t1 = t2;

t2 = nextTerm;

nextTerm = t1 + t2;

}

return 0;

}

Output

Enter the number of terms: 10

Fibonacci Series: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34,

**Question no.5**

#include <stdio.h>

int main() {

int n, i, flag = 0;

printf("Enter a positive integer: ");

scanf("%d", &n);

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

// condition for non-prime

if (n % i == 0) {

flag = 1;

break;

}

}

if (n == 1) {

printf("1 is neither prime nor composite.");

}

else {

if (flag == 0)

printf("%d is a prime number.", n);

else

printf("%d is not a prime number.", n);

}

return 0;

}

Output

Enter a positive integer: 29

29 is a prime number.

**Question no.6**

rows = int(input("Enter the number of rows:"))

k = 2 \* rows - 2 # It is used for number of spaces

for i in range(0, rows):

for j in range(0, k):

print(end=" ")

k = k - 2 # decrement k value after each iteration

for j in range(0, i + 1):

print("\* ", end="") # printing star

print("")

Output

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

**Question no.7**

int temp;

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

{

for (int j = i + 1; j < total; j++)

{

if (a[i] > a[j])

{

temp = a[i];

a[i] = a[j];

a[j] = temp;

}

}

}

return a[total-2];

}

public static void main(String args[]){

int a[]={1,2,5,6,3,2};

int b[]={44,66,99,77,33,22,55};

System.out.println("Second Largest: "+getSecondLargest(a,6));

System.out.println("Second Largest: "+getSecondLargest(b,7));

}}

Output

Second Largest: 5

Second Largest: 77

**Question no.8**

<!DOCTYPE html>

<html>

<body>

<?php

//Initialize array

$arr = array(1, 2, 3, 4, 5);

//n determine the number of times an array should be rotated

$n = 3;

//Displays original array

print("Original array: <br>");

for ($i = 0; $i < count($arr); $i++) {

print($arr[$i] . " ");

}

//Rotate the given array by n times toward left

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

//Stores the first element of the array

$first = $arr[0];

for($j = 0; $j < count($arr)-1; $j++){

//Shift element of array by one

$arr[$j] = $arr[$j+1];

}

//First element of array will be added to the end

$arr[$j] = $first;

}

print("<br>");

//Displays resulting array after rotation

print("Array after left rotation: <br>");

for ($i = 0; $i < count($arr); $i++) {

print($arr[$i] . " ");

}

?>

</body>

</html>

Output

Original array:

1 2 3 4 5

Array after left rotation:

4 5 1 2 3

**Question no. 9**

#include <map>

#include <set>

#include <list>

#include <cmath>

#include <ctime>

#include <deque>

#include <queue>

#include <stack>

#include <string>

#include <bitset>

#include <cstdio>

#include <limits>

#include <vector>

#include <climits>

#include <cstring>

#include <cstdlib>

#include <fstream>

#include <numeric>

#include <sstream>

#include <iostream>

#include <algorithm>

#include <unordered\_map>

using namespace std;

int main(){

int n;

cin >> n;

for(int a0 = 0; a0 < n; a0++){

int grade;

cin >> grade;

if (grade >= 38) {

int rem = grade % 5;

if (rem >= 3) grade += 5 - rem;

}

cout << grade << endl;

}

return 0;

}

**Question no.10**

#include <math.h>

#include <stdio.h>

#include <string.h>

#include <stdlib.h>

#include <assert.h>

#include <limits.h>

#include <stdbool.h>

int main(){

char\* s = (char \*)malloc(10240 \* sizeof(char));

scanf("%s",s);

int coun=0,i;

for(i=0;i<strlen(s);i++)

{

if(s[i]>=65 && s[i]<=90){coun++;}

}

printf("%d\n",coun+1);

return 0;

}