**Assignment - 3 A Job Ready Bootcamp in C++, DSA and IOT MySirG**

(Solutions)

**Decision Control Statements**

**1. Write a program to check whether a given number is positive or non-positive.**

#include <stdio.h>

*int* main()

{

*int* n;

    printf("Enter a no. : ");

    scanf("%d", &n);

    if (n > 0)

    {

        printf("The number is positive.");

    }

    else

    {

        printf("The number is non-positive.");

    }

    return 0;

}

**2. Write a program to check whether a given number is divisible by 5 or not**

#include <stdio.h>

*int* main()

{

*int* n;

    printf("Enter the number: ");

    scanf("%d", &n);

    if (n % 5 == 5 || n % 5 == 0)

    {

        printf("It is divisible by 5.");

    }

    else

    {

        printf("It is not divisible by 5");

    }

    return 0;

}

**3. Write a program to check whether a given number is an even number or an odd number.**

#include <stdio.h>

*int* main()

{

*int* n;

    printf("Enter the number: ");

    scanf("%d", &n);

    if (n % 2 == 0)

    {

        printf("It is an even number.");

    }

    else

    {

        printf("It is an odd number");

    }

    return 0;

}

**4. Write a program to check whether a given number is an even number or an odd number without using % operator.**

#include <stdio.h>

*int* main()

{

*int* number;

    printf("Enter a number to check even or odd");

    scanf("%d", &number);

    if ((number & 1) == 0)

        printf("%d is even.", number);

    else

        printf("%d is odd.", number);

    return 0;

}

**5. Write a program to check whether a given number is a three-digit number or not.**

#include <stdio.h>

*int* main()

{

*int* n;

    printf("Enter a number: ");

    scanf("%d", &n);

    if (n > 99 & n < 999)

    {

        printf("This is a three digit number.");

    }

    else

    {

        printf("It is not a three digit number");

    }

    return 0;

}

**6. Write a program to print greater between two numbers. Print one number of both are the same.**

#include <stdio.h>

*int* main()

{

*int* a, b;

    printf("Enter A: ");

    scanf("%d", &a);

    printf("Enter B: ");

    scanf("%d", &b);

    if (a > b)

    {

        printf("A=%d is Greater.", a);

    }

    if(b>a)

    {

        printf("B=%d is Greater.", b);

    }

    if (a == b)

    {

        printf("Both are same: %d", a);

    }

    return 0;

}

**7. Write a program to check whether roots of a given quadratic equation are real & distinct, real & equal or imaginary roots.**

#include <stdio.h>

*int* main()

{

*int* a, b, c, D;

    printf("Finding the nature of roots of a given quadratic equation.");

    printf("\nEnter the value of a: ");

    scanf("%d", &a);

    printf("Enter the value of b: ");

    scanf("%d", &b);

    printf("Enter the value of c: ");

    scanf("%d", &c);

    D = b \* b - 4 \* a \* c;

    if (D > 0)

    {

        printf("Roots are Real & Distinct.");

    }

    else if (D == 0)

    {

        printf("Roots are Real & Equal.");

    }

    else if (D < 0)

    {

        printf("Roots are Imaginary.");

    }

    printf("\n\n%d", D);

    return 0;

}

**8. Write a program to check whether a given year is a leap year or not.**

#include <stdio.h>

*int* main()

{

*int* yr;

    printf("Enter the year: ");

    scanf("%d", &yr);

    if (yr % 4 == 0)

    {

        printf("%d is a Leap Year.", yr);

    }

    else if (yr % 400 == 0)

    {

        printf("%d is a Leap Year.", yr);

    }

    else

    {

        printf("%d is not a Leap Year.", yr);

    }

    return 0;

}

**9. Write a program to find the greatest among three given numbers. Print number once if the greatest number appears two or three times.**

#include <stdio.h>

*int* main()

{

*int* a, b, c;

    printf("Enter A: ");

    scanf("%d", &a);

    printf("Enter B: ");

    scanf("%d", &b);

    printf("Enter C: ");

    scanf("%d", &c);

    if (a > b)

    {

        if (a > c)

        {

            printf("A is greatest.");

        }

        else

        {

            printf("C is greatest.");

        }

    }

    else if (b > c)

    {

        printf("B is greatest.");

    }

    else

    {

        printf("C is greatest.");

    }

    return 0;

}

**10. Write a program which takes the cost price and selling price of a product from the user. Now calculate and print profit or loss percentage.**

#include <stdio.h>

*int* main()

{

*float* cp, sp, profit, x, loss, y;

    printf("Enter the Cost price: Rs");

    scanf("%f", &cp);

    printf("Enter the Selling price: Rs");

    scanf("%f", &sp);

    if (sp > cp)

    {

        printf("PROFIT");

        profit = sp - cp;

        printf("\nProfit = %.2f", profit);

        x = (profit \* 100 / cp);

        printf("\nProfit prcent = %.2f", x);

    }

    else

    {

        printf("LOSS");

        loss = cp - sp;

        printf("\nLoss = %.2f", loss);

        y = (loss \* 100 / cp);

        printf("\nLoss percent = %.2f", y);

    }

    return 0;

}

**11. Write a program to take marks of 5 subjects from the user. Assume marks are given out of 100 and passing marks is 33. Now display whether the candidate passed the examination or failed.**

#include <stdio.h>

*int* main()

{

*int* phy, bio, chem, math, gk;

    printf("Enter your obtained marks :->");

    printf("\nPhysics = ");

    scanf("%d", &phy);

    printf("Biology = ");

    scanf("%d", &bio);

    printf("Chemistry = ");

    scanf("%d", &chem);

    printf("Maths = ");

    scanf("%d", &math);

    printf("GK = ");

    scanf("%d", &gk);

    if (phy < 33)

    {

        printf("\nYou are fail in Physics.");

    }

    else

        printf("\nYou are pass in Physics.");

    if (bio < 33)

    {

        printf("\nYou are fail in Biology.");

    }

    else

        printf("\nYou are pass in Biology.");

    if (chem < 33)

    {

        printf("\nYou are fail in Chemistry.");

    }

    else

        printf("\nYou are pass in Chemistry.");

    if (math < 33)

    {

        printf("\nYou are fail in Maths.");

    }

    else

        printf("\nYou are pass in Maths.");

    if (gk < 33)

    {

        printf("\nYou are fail in GK.");

    }

    else

        printf("\nYou are pass in GK.");

    return 0;

}

**12. Write a program to check whether a given alphabet is in uppercase or lowercase.**

#include <stdio.h>

*int* main()

{

*char* x;

    printf("Enter an alphabet : ");

    scanf("%c", &x);

    if (x >= 'A' && x <= 'Z')

    {

        printf("It is a Uppercase letter");

    }

    else

        printf("It is Lowercase letter");

    return 0;

}

**13. Write a program to check whether a given number is divisible by 3 and divisible by 2.**

#include <stdio.h>

*int* main()

{

*int* num;

    printf("Enter a number : ");

    scanf("%d", &num);

    if (num % 2 == 0)

    {

        printf("It is divisible by 2.");

    }

    if (num % 3 == 0)

    {

        printf("\nIt is divisible by 3.");

    }

    else

        printf("Not divisible by 2 and 3.");

    return 0;

}

**14. Write a program to check whether a given number is divisible by 7 or divisible by 3.**

#include <stdio.h>

*int* main()

{

*int* num;

    printf("Enter a number : ");

    scanf("%d", &num);

    if (num % 7 == 0)

    {

        printf("It is divisible by 7.");

    }

    if (num % 3 == 0)

    {

        printf("\nIt is divisible by 3.");

    }

    else

        printf("Not divisible by 7 or 3.");

    return 0;

}

**15. Write a program to check whether a given number is positive, negative or zero.**

#include <stdio.h>

*int* main()

{

*int* num;

    printf("Enter a number : ");

    scanf("%d", &num);

    if (num > 0)

    {

        printf("It is Positive number");

    }

    if (num < 0)

    {

        printf("It is negative number.");

    }

    if (num == 0)

        printf("It is Zero.");

    return 0;

}

**16. Write a program to check whether a given character is an alphabet (uppercase), an alphabet (lower case), a digit or a special character.**

#include <stdio.h>

*int* main()

{

*char* x;

    printf("Enter the character : ");

    scanf("%c", &x);

    if (x >= 'A' && x <= 'Z')

    {

        printf("It is a Uppercase letter");

    }

    else if (x >= 'a' && x <= 'z')

    {

        printf("It is Lowercase letter");

    }

    else if (x > '0' && x < '9')

    {

        printf("It is a digit.");

    }

    else

    {

        printf("It is a special character");

    }

    return 0;

}

**17. Write a program which takes the length of the sides of a triangle as an input. Display whether the triangle is valid or not.**

#include <stdio.h>

*int* main()

{

*int* a, b, c;

    printf("Enter length of a triangle :-");

    printf("\nSide 1 = ");

    scanf("%d", &a);

    printf("Side 2 = ");

    scanf("%d", &b);

    printf("Side 3 = ");

    scanf("%d", &c);

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

    {

        printf("Triangle is valid.");

    }

    else

        printf("Triangle is not valid.");

    return 0;

}

**18. Write a program which takes the month number as an input and display number of days in that month**

#include <stdio.h>

*int* main()

{

*int* num;

    printf("Enter the month number: ");

    scanf("%d", &num);

    switch (num)

    {

    case 1:

        printf("January = 31 days");

        break;

    case 2:

        printf("February = 28 days");

        printf("\nFebruary = 29 days in a Leap Year");

        break;

    case 3:

        printf("March = 31 days");

        break;

    case 4:

        printf("April = 30 days");

        break;

    case 5:

        printf("May = 31 days");

        break;

    case 6:

        printf("June = 30 days");

        break;

    case 7:

        printf("July = 31 days");

        break;

    case 8:

        printf("August = 31 days");

        break;

    case 9:

        printf("September = 30 days");

        break;

    case 10:

        printf("October = 31 days");

        break;

    case 11:

        printf("November = 30 days");

        break;

    case 12:

        printf("December = 31 days");

        break;

    default:

        printf("Invalid Input");

        break;

    }

    return 0;

}