**Assignment - 1**

**Ans 1. WAP to check whether a given is Armstrong or not.**

#include <stdio.h>

int main() {

    int num,orig,rem,result;

    printf("Enter wny number: ");

    scanf("%d",&num);

    orig==num;

    while(orig!=0){

        rem=orig%10;

        rem += rem \*rem\*rem;

        orig=orig/10;

    }

    if(result == num)

    printf("It's an Armstrong number");

    else

    printf("It's not an Armstrong number");

    return 0;

}

**Ans 2. WAP to read two integers and print their HCF (Highest Common Factor)**

#include <stdio.h>

int main() {

    int num1, num2, hcf;

    printf("Enter two integers: ");

    scanf("%d %d", &num1, &num2);

    hcf = (num1 < num2) ? num1 : num2;

    while (hcf > 0) {

        if (num1 % hcf == 0 && num2 % hcf == 0) {

            break;

        }

        hcf--;

    }

    printf("The HCF is: %d\n", hcf);

    return 0;

}

**Ans 3. WAP to subtract two integers without using Minus (-) operator. (Hint Bitwise operator)**

#include <stdio.h>

int main() {

    int num1, num2;

    printf("Enter two integers: ");

    scanf("%d %d", &num1, &num2);

    int complement = ~num2 + 1;

    int result = num1 + complement;

    printf("The result of subtraction is: %d\n", result);

    return 0;

}

**Ans 4. WAP to accept two integer numbers and swap them using 4 different methods in C language**

**Method 1- using 3 variables**

#include<stdio.h>

int main(){

    int a,b;

    printf("Enter two numbers a and b: ");

    scanf("%d %d",&a,&b);

    int c= b;

    b=a;

    a=c;

    printf("The new values of a and b are: %d %d",a,b);

    return 0;

}

**Method 2- using only two variables (addition and subraction)**

#include<stdio.h>

int main(){

    int a,b;

    printf("Enter two numbers a and b: ");

    scanf("%d %d",&a,&b);

    a=a+b;

    b=a-b;

    a=a-b;

    printf("the new values of a and b are: %d %d",a,b);

    return 0;

}

**Method 3- Using multliplication and division**

#include <stdio.h>

int main() {

    int a, b;

    printf("Enter two numbers: ");

    scanf("%d %d", &a, &b);

    a = a \* b;

    b = a / b;

    a = a / b;

    printf("New va;ues of a and b are: a = %d, b = %d\n", a, b);

    return 0;

}

**Method 4- Bitwise XOX**

#include <stdio.h>

int main() {

    int a, b;

    printf("Enter two numbers: ");

    scanf("%d %d", &a, &b);

    a = a ^ b;

    b = a ^ b;

    a = a ^ b;

    printf("After swapping: a = %d, b = %d\n", a, b);

    return 0;

}

**Ans 5. WAP to check whether number is Perfect Number or not**

#include<stdio.h>

int main(){

    int num, sum = 0;

    printf("Enter the number: ");

    scanf("%d", &num);

    for (int i = 1; i <= num / 2; i++) {

        if (num % i == 0) {

            sum += i;

        }

    if (sum == num && num > 0) {

        printf("It is a Perfect Number.\n");

    } else {

        printf("It is not a Perfect Number.\n");

    }

    return 0;

}

}

**Ans 8. WAP to print below mentioned pattern:**

#include<stdio.h>

int main(){

    int i,j;

    for(i=0;i<=6;i++)

    {

    for(j=1;j<i;j++)

    {

    if((i+j)%2==0)

    printf("0");

    else

    printf("1");

    }

    printf("\n");

    }

    return 0;

}

**Ans 9. WAP to print following Pyramid:**

#include <stdio.h>

int main() {

    int n = 5;

    for (int i = 1; i <= n; i++) {

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

            printf("%d", j % 2);

        }

        printf(" ");

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

            printf("%d", j % 2);

        }

        printf("\n");

    }

    return 0;

}

**Ans 10. WAP to print Pascal's Triangle**

#include <stdio.h>

int main() {

    int rows;

    printf("Enter the number of rows for Pascal's Triangle: ");

    scanf("%d", &rows);

    for (int i = 0; i < rows; i++) {

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

            printf(" ");

        }

        int value = 1;

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

            printf("%d ", value);

            value = value \* (i - j) / (j + 1);

        }

        printf("\n");

    }

    return 0;

}

**Ans 6. WAP to accept a coordinate point in an XY coordinate system and determine in which quadrant the coordinate point lies.**

#include<stdio.h>

int main(){

    int xcoor,ycoor;

    printf("Enter x and y co-ordinate of a point: ");

    scanf("%d %d",&xcoor,&ycoor);

    if(xcoor >0 && ycoor >0)

    printf("The point is in First Quadrant.");

    else if(xcoor <0 && ycoor >0)

    printf("The point is in Second Quadrant.");

    else if(xcoor <0 && ycoor >0)

    printf("The point is in Second Quadrant.");

    else if(xcoor <0 && ycoor <0)

    printf("The point is in Third Quadrant.");

    else if(xcoor >0 && ycoor <0)

    printf("The point is in Fourth Quadrant.");

    else if(xcoor == 0 && ycoor !=0 )

    printf("The point is on Y-axis.");

    else if(ycoor == 0 && xcoor !=0)

    printf("The point is on X-axis.");

    else if(xcoor == 0 && ycoor == 0)

    printf("The point is in origin.");

    else

    printf("invalid co-ordinates...");

}

**Ans 7. WAP for Binary to Decimal conversion & Decimal to Binary for a given number as per user’s choice.**

#include <stdio.h>

#include <math.h>

int main() {

    int choice, num, decimal = 0, binary = 0, base = 1, rem;

    printf("Choose the conversion type:\n");

    printf("1. Binary to Decimal\n");

    printf("2. Decimal to Binary\n");

    printf("Enter your choice: ");

    scanf("%d", &choice);

    if (choice == 1) {

        printf("Enter a binary number: ");

        scanf("%d",&num);

        int n=num, power=0;

        while (n>0) {

            rem = n%10;

            decimal += rem \* pow(2, power);

            power++;

            n /= 10;

        }

        printf("The decimal equivalent of binary %d is: %d\n", num, decimal);

    } else if (choice == 2) {

        printf("Enter a decimal number: ");

        scanf("%d", &num);

        int n=num;

        while (n>0) {

            rem = n%2;

            binary += rem \* base;

            base \*= 10;

            n /= 2;

        }

        printf("The binary equivalent of decimal %d is: %d\n", num, binary);

    } else {

        printf("Invalid choice");

    }

    return 0;

}