#include <stdio.h>

#include <math.h>

int main()

{

    int option, len\_num, number\_1, number\_2, number\_3;

    printf("Welcome to Number identifier.\n Please enter your desired option:\n1) Armstrong number Identifier\n2) Prime Number Identifier\n3) Square root finder.\n--> ");

    scanf("%d", &option);

    switch (option)

    {

    case 1:

        printf("Welcome to the Armstrong Number Identifier.\n How long is your number?-->");

        scanf("%d", &len\_num);

        printf("Please enter the number -->");

        scanf("%d", &number\_1);

        int num\_armstrong = 0;

        int temporary = number\_1;

        for (int i = 0; i < len\_num; i++)

        {

            num\_armstrong = num\_armstrong + pow((temporary % 10), len\_num);

            temporary = temporary / 10;

        }

        if (num\_armstrong == number\_1)

        {

            printf("Yes! Your number is an Armstrong Number!.");

        }

        else

        {

            printf("No. Your number is not an Armstrong Number.");

        }

        break;

    case 2:

        printf("Welcome to the Prime Number Identifier.\n Please enter a number-->");

        scanf("%d", &number\_2);

        int divisor = 2;

        int flag = 0;

        for (divisor = 2; divisor < number\_2; divisor++)

        {

            if (number\_2 % divisor == 0)

            {

                flag++;

            }

            else

            {

                break;

            }

        }

        if (flag == 0)

        {

            printf("Yes! Your number is a Prime Number!");

        }

        else

        {

            printf("No. Your number is not a Prime Number.");

        }

        break;

    case 3:

        printf("Welcome to the Square Root Finder.\n Please enter a number-->");

        scanf("%d", &number\_3);

        float sq\_root = sqrt(number\_3);

        printf("The square root of your given number is %lf.", sq\_root);

        break;

    default:

        printf("Enter a valid option.");

        break;

    }

    printf("\nThank you!");

    return 0;

}

Program 4b

#include <stdio.h>

int main()

{

    int option, year, num;

    char letter;

    printf("Welcome to the Check-inator! Please select an option:\n1)Vowel Checker.\n2) Leap Year Checker.\n3)Even Number Checker.\n-->");

    scanf("%d", &option);

    switch (option)

    {

    case 1:

        printf("Welcome to the Vowel Checker! Enter a character--> ");

        scanf(" %c", &letter);

        if (letter == 'a' || letter == 'e' || letter == 'i' || letter == 'o' || letter == 'u' || letter == 'A' || letter == 'E' || letter == 'I' || letter == 'O' || letter == 'U')

        {

            printf("Your letter is a vowel!\n");

        }

        else

        {

            printf("Your letter is not a vowel.\n");

        }

        break;

    case 2:

        printf("Welcome to the Leap Year Checker! Please enter a year --> ");

        scanf("%d", &year);

        if (year % 400 == 0 || (year % 4 == 0 && year % 100 != 0))

        {

            printf("Yes the year is a leap year!\n");

        }

        else

        {

            printf("No. The year is not a leap year.\n");

        }

        break;

    case 3:

        printf("Welcome to the Even Number Checker! Please enter a number -->");

        scanf("%d", &num);

        int result = (num % 2 == 0) ? 1 : 0;

        if (result == 0)

        {

            printf("Your number is an Odd Number.\n");

        }

        else

        {

            printf("Your number is an Even Number.\n");

        }

        break;

    default:

        printf("Please enter a valid option\n");

        break;

    }

    printf("Thank you!");

    return 0;

}