# CSE ASSIGNMENT 4

## Question 1:

> *Write a C program to check whether the given number is an Adam’s square number or not*

```c
// Program to find if the given number is an Adam number

#include <stdio.h>

int reverse(int a)
{
    int i = 0, rem;

    while (a != 0)
    {
        rem = a % 10;
        a = a / 10;
        i = (i * 10) + rem;
    }

    return i;
}

int main()
{
    int a, b = 0, c = 0, d = 0;

    printf("Input the number to be tested: ");
    scanf("%d", &a);

    b = reverse(a);

    printf("The number and it's reverse is %d => %d", a,b);

    c = a * a;
    d = b * b;

    printf("\nThe square of the number and it's reverse is %d => %d", c,d);

    if (c == reverse(d))
    {
        printf("\nThe given number %d is an Adam's number\n", a);
    }
    else
    {
        printf("\nThe given number %d is not an Adam's number\n", a);
    }
}
```

```
Input the number to be tested: 21
The number and it's reverse is 21 => 12
The square of the number and it's reverse is 441 => 144
The given number 21 is an Adam's number
```

## Question 2:

> *write a C program to find the GCD of given two numbers and check the GCD value is equal to one then print as co-prime numbers. List out all possible co-prime numbers from 2 to 20*

```c
// Program to find GCD of two prime numbers and print all co-primes from 2 - 20

#include <stdio.h>

void GCD(int n1, int n2, int coprime_flag)
{
    int rem, x, y;

    x = n1;
    y = n2;
    rem = n1 % n2;

    while (rem > 0)
    {
        n1 = n2;
        n2 = rem;
        rem = n1 % n2;
    }

    if (n2 == 1)
    {
        printf("The numbers %d and %d are co-prime\n", x, y);
    }
    else if (coprime_flag == 0)
    {
        printf("The GCD of %d and %d is %d\n", x, y, n2);
    }
}

void print_coprimes(int num)
{
    int i, j;

    for (i = 2; i <= num; i++)
    {
        for (j = i; j <= num; j++)
        {
            if (i == j)
            {
                continue;
            }
```

```
            else
            {
                GCD(i, j, 1);
            }
        }
    }
}

int main (int argc, char *argv[])
{
    int a, b;

    printf("Enter the numbers: ");
    scanf("%d %d", &a, &b);
    GCD(a, b, 0);
    print_coprimes(20);
}
```

```
Enter the numbers: 4 12
The GCD of 4 and 12 is 4
The numbers 2 and 3 are co-prime
The numbers 2 and 5 are co-prime
The numbers 2 and 7 are co-prime
The numbers 2 and 9 are co-prime
The numbers 2 and 11 are co-prime
The numbers 2 and 13 are co-prime
The numbers 2 and 15 are co-prime
The numbers 2 and 17 are co-prime
The numbers 2 and 19 are co-prime
The numbers 3 and 4 are co-prime
The numbers 3 and 5 are co-prime
The numbers 3 and 7 are co-prime
The numbers 3 and 8 are co-prime
The numbers 3 and 10 are co-prime
The numbers 3 and 11 are co-prime
The numbers 3 and 13 are co-prime
The numbers 3 and 14 are co-prime
The numbers 3 and 16 are co-prime
The numbers 3 and 17 are co-prime
The numbers 3 and 19 are co-prime
The numbers 3 and 20 are co-prime
The numbers 4 and 5 are co-prime
The numbers 4 and 7 are co-prime
The numbers 4 and 9 are co-prime
The numbers 4 and 11 are co-prime
The numbers 4 and 13 are co-prime
The numbers 4 and 15 are co-prime
The numbers 4 and 17 are co-prime
The numbers 4 and 19 are co-prime
The numbers 5 and 6 are co-prime
The numbers 5 and 7 are co-prime
The numbers 5 and 8 are co-prime
```

```
The numbers 5 and 9 are co-prime
The numbers 5 and 11 are co-prime
The numbers 5 and 12 are co-prime
The numbers 5 and 13 are co-prime
The numbers 5 and 14 are co-prime
The numbers 5 and 16 are co-prime
The numbers 5 and 17 are co-prime
The numbers 5 and 18 are co-prime
The numbers 5 and 19 are co-prime
The numbers 6 and 7 are co-prime
The numbers 6 and 11 are co-prime
The numbers 6 and 13 are co-prime
The numbers 6 and 17 are co-prime
The numbers 6 and 19 are co-prime
The numbers 7 and 8 are co-prime
The numbers 7 and 9 are co-prime
The numbers 7 and 10 are co-prime
The numbers 7 and 11 are co-prime
The numbers 7 and 12 are co-prime
The numbers 7 and 13 are co-prime
The numbers 7 and 15 are co-prime
The numbers 7 and 16 are co-prime
The numbers 7 and 17 are co-prime
The numbers 7 and 18 are co-prime
The numbers 7 and 19 are co-prime
The numbers 7 and 20 are co-prime
The numbers 8 and 9 are co-prime
The numbers 8 and 11 are co-prime
The numbers 8 and 13 are co-prime
The numbers 8 and 15 are co-prime
The numbers 8 and 17 are co-prime
The numbers 8 and 19 are co-prime
The numbers 9 and 10 are co-prime
The numbers 9 and 11 are co-prime
The numbers 9 and 13 are co-prime
The numbers 9 and 14 are co-prime
The numbers 9 and 16 are co-prime
The numbers 9 and 17 are co-prime
The numbers 9 and 19 are co-prime
The numbers 9 and 20 are co-prime
The numbers 10 and 11 are co-prime
The numbers 10 and 13 are co-prime
The numbers 10 and 17 are co-prime
The numbers 10 and 19 are co-prime
The numbers 11 and 12 are co-prime
The numbers 11 and 13 are co-prime
The numbers 11 and 14 are co-prime
The numbers 11 and 15 are co-prime
The numbers 11 and 16 are co-prime
The numbers 11 and 17 are co-prime
The numbers 11 and 18 are co-prime
The numbers 11 and 19 are co-prime
```

```
The numbers 11 and 20 are co-prime
The numbers 12 and 13 are co-prime
The numbers 12 and 17 are co-prime
The numbers 12 and 19 are co-prime
The numbers 13 and 14 are co-prime
The numbers 13 and 15 are co-prime
The numbers 13 and 16 are co-prime
The numbers 13 and 17 are co-prime
The numbers 13 and 18 are co-prime
The numbers 13 and 19 are co-prime
The numbers 13 and 20 are co-prime
The numbers 14 and 15 are co-prime
The numbers 14 and 17 are co-prime
The numbers 14 and 19 are co-prime
The numbers 15 and 16 are co-prime
The numbers 15 and 17 are co-prime
The numbers 15 and 19 are co-prime
The numbers 16 and 17 are co-prime
The numbers 16 and 19 are co-prime
The numbers 17 and 18 are co-prime
The numbers 17 and 19 are co-prime
The numbers 17 and 20 are co-prime
The numbers 18 and 19 are co-prime
The numbers 19 and 20 are co-prime
```

## Question 3:

> *write a source code in c language to display the output. Ask the user to enter the number of sides to be entered and find the perimeter for the corresponding shape with the assumption as below. Assume corresponding shape for the given user input 1- Square, 2- Rectangle, 3 – Triangle and 4 – Polygon*

```c
// Program to calculate perimeter of an n-sided polygon based on user input

#include <stdio.h>

void perimeter (const int *choice)
{
    switch (*choice)
    {
        case 1:
        {
            int side;

            printf("Enter the length of the side : ");
            scanf("%d", &side);

            printf("The perimeter of the square is : %d\n", 4 * side);

            break;
        }
        case 2:
```

```
        {
            int l, b;

            printf("Enter the length of the rectangle : ");
            scanf("%d", &l);

            printf("Enter the breadth of the rectangle : ");
            scanf("%d", &b);

            printf("The perimeter of the rectangle is : %d\n", 2 * (l + b));

            break;
        }
        case 3:
        {
            int side, perimeter = 0;

            for (int i = 1; i != 4; i++)
            {
                printf("Enter the length of side%d : ", i);
                scanf(" %d", &side);

                perimeter += side;
            }

            printf("The perimeter of the triangle is : %d\n", perimeter);

            break;
        }
        case 4:
        {
            int side, n, perimeter = 0;

            printf("Enter the number of sides : ");
            scanf("%d", &n);

            for (int i = 1; i != n + 1; i++)
            {
                printf("Enter the length of side%d : ", i);
                scanf("%d", &side);

                perimeter += side;
            }

            printf("The perimeter of the polygon is : %d\n", perimeter);

            break;
        }
    }
}

int main (int argc, char *argv[])
```

```
{
    int choice;

    printf("Perimeter Calculator\n\n1. Square\n2. Rectangle\n3. Triangle\n4.
Polygon\n\nEnter your choice : ");
    scanf("%d", &choice);

    perimeter(&choice);

    return 0;
}
```

```
Perimeter Calculator

1. Square
2. Rectangle
3. Triangle
4. Polygon

Enter your choice : 4
Enter the number of sides : 5
Enter the length of side1 : 1
Enter the length of side2 : 2
Enter the length of side3 : 3
Enter the length of side4 : 4
Enter the length of side5 : 5
The perimeter of the polygon is : 15
```

## Question 4:

> *Write a C Program to automate the price calculation process for a car show room. Get the showroom price, discount and road tax from the user. The GST for each car differs based on the show room price. Show room price of car GST % < 5 lakh 8 % = 5 lakh && < 10 lakh 18 % = 10 lakh 28 % Calculate the onroad price of the car. (onroad price = (showroom price + road tax + GST) – discount) Repeat the calculation process for ‘n’ cars*

```
// Program to calcuate car price in the showroom

#include <stdio.h>

int main (int argc, char *argv[])
{
    int next;

    do
    {
        int car_price, road_tax, discount, gst;

        printf("Enter the price of the car : ");
        scanf("%d", &car_price);
```

```
        printf("Enter the amount of road tax : ");
        scanf("%d", &road_tax);

        printf("Enter the disount percentage : ");
        scanf("%d", &discount);

        if (car_price < 500000)
        {
            gst = 8 * (car_price / 100);
        }
        else if (car_price >= 500000 && car_price < 1000000)
        {
            gst = 18 * (car_price / 100);
        }
        else
        {
            gst = 28 * (car_price / 100);
        }

        printf("The on-road price of this car is : %d\n", (car_price + road_tax + gst)
- (discount * (car_price / 100)));

        printf("Enter '1' if you want to continue : ");
        scanf("%d", &next);

        if (next != 1)
        {
            next = 0;
        }
    }while (next);

    return 0;
}
```

```
Enter the price of the car : 12000000
Enter the amount of road tax : 7000
Enter the disount percentage : 12
The on-road price of this car is : 13927000
Enter '1' if you want to continue : 0
```

## Question 5:

> *write a c program to calculate electricity bill. Get customer id, previous unit and current unit. To calculate electricity bill, ask tariff choice (1.domestic, 2.commercial, 3.industry) from the user. Calculate electricity bill for the following power tariff and print the total amount Category Unit Range Charges(Rs) Domestic 0-100 2.75*
> *101-500 4.50 Above 500 5 Commercial 0-200 5 201-500 5.5 Above 500 6 Industry 10 Ask the user “Do you want to continue?”, if the user press 1, the program will ask the user to enter customer details to calculate bill, otherwise the program will be closed*

```c
// Program to calculate the electriciy bill

#include <stdio.h>

void bill(int id);
int tarD(int unit);
int tarC(int unit);

int main()
{
    int id, i;

    do
    {
        printf("Enter your customer id of 6 digits\n");
        scanf("%d", &id);

        bill(id);

        printf("\nContinue?\n 1 to continue 0 to end");
        scanf("%d", &i);
    }while (i != 0);
}

void bill(int id)
{
    int tar, charges, punit, nunit, unit;

    printf("\nEnter previous unit and current unit:  ");
    scanf("%d %d", &punit, &nunit);

    unit = nunit - punit;

    printf("\n\nChoose your tariff type \n1-Domestic, 2-Commercial, 3-Industrial\n");
    scanf("%d", &tar);

    switch (tar)
    {
        case 1:
            tarD(unit);
            printf("\nCustomer id: %d\n No. of units consumed: %d\n Bill for this
month: %d", id, unit, tarD(unit));

            break;

        case 2:
            tarC(unit);
            printf("\nCustomer id: %d\n No. of units consumed: %d\n Bill for this
month: %d", id, unit, tarC(unit));

            break;
```

```
        case 3:

            charges = unit * 10;
            printf("\nCustomer id: %d\n No. of units consumed: %d\n Bill for this
month: %d", id, unit, charges);

            break;
    }
}

int tarD(int unit)
{
    int charges;

    if (unit > 0 && unit <= 100)
    {
        charges = unit * 2.75;
    }
    else if (unit > 100 && unit <= 500)
    {
        charges = unit * 4.50;
    }
    else
    {
        charges = unit * 5.00;
    }

    return charges;
}

int tarC(int unit)
{
    int charges;

    if (unit > 0 && unit <= 200)
    {
        charges = unit * 5;
    }
    else if (unit > 200 && unit <= 500)
    {
        charges = unit * 5.50;
    }
    else
    {
        charges = unit * 6.00;
    }

    return charges;
}
```

```
Enter your customer id of 6 digits
147258
```

```
Enter previous unit and current unit:  45 77


Choose your tariff type
1-Domestic, 2-Commercial, 3-Industrial
2

Customer id: 147258
 No. of units consumed: 32
 Bill for this month: 160
Continue?
 1 to continue 0 to end0
```