CSE 115 Lab on nested loop (part3) – Ara2

1. **C program to print all perfect numbers between 1 to n:**

```
#include <stdio.h>

void main()
{
    int i, j, n, sum = 0;

    printf("Enter any number to print perfect number up to: ");
    scanf("%d", &n);

    printf("\nAll Perfect numbers between 1 to %d:\n", n);
    //Iterates from 1 to n and print if it is perfect number
    for(i=1; i<=n; i++)
    {
        sum = 0;

        // print i if the current value of i is a Perfect number
        for(j=1; j<i; j++)
        {
            if(i%j==0)//if j is a divisor of i then add j with sum
            {
                sum += j;
            }
        }
        //now sum = (sum of all proper divisors of i)
        if(sum == i) // If the current value of i is Perfect
            printf("%d, ", i);
    }
}//main
```

2. C program to print all prime numbers between 1 and n.

```
#include<stdio.h>
#include<conio.h>

int main(){

    int N, i, j, isPrime, n;

    printf("Enter the value of N\n");
    scanf("%d",&N);

    /* For each number between 2 to N, check
if it is prime number or not */
    printf("Prime no. from %d to %d", 1, N);
```

```
for(i = 2; i <= N; i++){
        isPrime = 0;
        // Check if i is prime
        for(j = 2; j <= i/2; j++){
             if(i % j == 0){
                 isPrime = 1;
                 break;
             }
        }

        if(isPrime==0)
            printf("%d ",i);
    }
}
```

3. Write a program that prints first n prime numbers (n is input). E.g. for n = 5 it should print: 2,3,5,7,11,

```
#include<stdio.h>

void main()
{
    int n, i = 2, count=0, j, isPrime;

    printf("Enter n: ");
    scanf("%d",&n);

    printf("First %d prime numbers: ", n);
    while (count < n)
    {
        //if current value of i is a prime no., then print it
        isPrime = 1;  //let the current value of i is a prime no.
        for ( j = 2 ; j <= i/2; j++ )
        {
            if ( i%j == 0 ){ //if i has a divisor then i isn't prime
                isPrime = 0; //so assign 0 to isPrime to indicate this
                break;
            }
        }//for
        if (isPrime)
        {
            printf("%d, ",i); //move this outside while loop to print n-th prime
            count++;
        }
        i++;
    }//while
}//main
```

Exercise:

1. **Write a C program to print all prime numbers between *1* and *n* in reverse order (*n* is an input).**
   Sample input/output:
   Enter n: **20**
   All prime numbers between 1 and 20 (in reverse order):19, 17, 13, 11, 7, 5, 3, 2,
2. **Write a C program to compute and print the sum of all prime numbers between *m* and *n* (*m, n* are inputs)**
3. **Write a C program to print the first *n* perfect numbers where *n* is an input.**
4. **Write a C program to compute and print the sum of first *n* perfect numbers.**
5. **Write a C program to print the *n*-th perfect number where *n* is an input.**

Assignment:

1. **Write a C program to print all palindrome numbers between m and n (m, n are inputs). For e.g. 121 is a palindrome since the reverse of 121 = 121; but 152 is not a palindrome.**
2. **Write a C program to compute and print the sum of palindrome numbers between m and n**
3. **Write a C program to print the first n palindrome numbers where n is an input.**