Can Tasar

Introduction to software development homework-1

C HOMEWORKS – 1

Question-1: Write a C program to prove that Euclid's algorithm computes the greatest common divisor of two positive given integers.

```c
#include "stdio.h"

int main()
{
    int a, b;
    printf("enter 2 number:\n");
    scanf("%d %d", &a, &b);

    while (b != 0)
    {
        int r = a%b;
        a = b;
        b = r;
    }
    printf("greatest common divisor: %d", a);
    return 0;
}
```

Q2- Write a C program that will accept an integer and convert it into a binary representation.

```c
#include <stdio.h>

int main()
{
    int num;
    printf("enter number: ");
    scanf("%d", &num);
    int binary[32];
    int i = 0;

    while (num > 0) {
        binary[i] = num % 2;
        num /= 2;
        i++;
    }
    i--;
    printf("binary representation: ");
    for (; i >= 0; i--) {
        printf("%d", binary[i]);
    }
    printf("\n");
    return 0;
}
```

Q3- Write a C program to divide the two given integers using subtraction operator.

```c
#include <stdio.h>

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

    printf("enter two num:\n");
    scanf("%d %d", &a, &b);

    int count = 0;

    printf("%d / %d ", a, b);
    while (a >= b)
    {
        a = a-b;
        count++;
    }
    printf("= %d ", count);

    return 0;
}
```

Q4- Write a C program to multiply two given integers without using the multiply operator(*)

```c
#include <stdio.h>

int main()
{
    int a, b;

    printf("enter two num:\n");
    scanf("%d %d", &a, &b);

    int count = 0;
    int result = 0;

    printf("%d * %d ", a, b);
    while (count < b)
    {
        result += a;
        count++;
    }
    printf("= %d ", result);

    return 0;
}
```

Q5- Write a C program to accept a positive number and repeatedly add all its digits until the result has only one digit.

```c
#include <stdio.h>

int main()
{
    int num;
    printf("enter num:\n");
    scanf("%d", &num);
    while (num > 9) {
        int sum = 0;

        // Add each digit of the current number
        while (num > 0) {
            sum += num % 10;
            num /= 10;
        }
        num = sum; // Update the number with the sum of its digits
    }
    printf("sum of all digits: %d", num);
    return 0;
}
```

Q6- Write a C program to add two binary numbers.

```c
#include <stdio.h>

int main()
{
    int b1,b2;
    int i = 0;
    int rest = 0;
    int sum[100];
    printf("Please enter two binary number:\n");
    scanf("%d %d" , &b1, &b2);

    while(b1 != 0 || b2 != 0) {
        sum[i++] = (b1 % 10 + b2 % 10 + rest) % 2;
        rest = (b1 % 10 + b2 % 10 + rest) / 2;
        b1 = b1 / 10;
        b2 = b2 / 10;
    }
    if (rest != 0) {
        sum[i++] = rest;
        i--;
    }
    while ( i >= 0)
        printf("%d" , sum[i--]);

    return 0;
}
```

Q7 Write a C program to convert a binary number to decimal number

```c
#include <stdio.h>

int main()
{
    int number,binary,num2;
    int decimal = 0;
    int base = 1;
    printf("Please enter a binary number: ");
    scanf("%d" , &number);
    binary = number;
    while ( number > 0 ) {
        num2 = number % 10;
        decimal = decimal + num2 * base;
        number = number / 10;
        base = base * 2;
    }
    printf("decimal is %d" , decimal);
    return 0;
}
```

Q8 Write a C program that, vhen you read an integer wih 5 digit, displat the middle digit. Example: If readed int is 74563 display 5.

```c
#include <stdio.h>

int main()
{
    int num;
    printf("enter 5 digits number: ");
    scanf("%d", &num);

    printf("middle number: %d", (num/100)%10);
    return 0;
}
```

Q9 Write a C program that accepts an integer (n) and computes the value of n+nn+nnn

```c
#include <stdio.h>

int main()
{
    int n;
    printf("enter a digit: ");
    scanf("%d", &n);

    printf("%d + %d%d + %d%d%d = %d", n, n, n, n, n, n, n + n*10+n + n*100+n*10+n);
    return 0;
}
```

Q10 Write a C program to print numbers between 1 to 100 which are divisible by 3, 5 and by both.

```c
#include <stdio.h>

int main()
{
    int i = 1;
    while (i <= 100)
    {
        if (i%3 == 0 && i%5 == 0)
            printf("%d divisible by both\n", i);
        else if (i%3 == 0)
            printf("%d divisible by three\n", i);
        else if (i%5 == 0)
            printf("%d divisible by five\n", i);
        else
            printf("%d\n", i);
        i++;
    }

    return 0;
}
```

Q11 Write a C program to compute the sum of the first 100 prime numbers.

```c
#include <stdio.h>

int main()
{
    int count = 0;
    int num = 2;
    int sum = 0;

    while (count < 100)
    {
        int flag = 1;

        for (int i = 2; i * i <= num; i++) {
            if (num % i == 0) {
                flag = 0;
                break;
            }
        }

        if (flag) {
            sum += num;
            count++;
        }
        num++;
    }

    printf("sum of the first 100 prime number: %d\n", sum);

    return 0;
}
```

Q12 Write a C program to count the number of days from the beginning of a year when a data is given fort he same year.

```c
#include <stdio.h>

int main(int argc, char const *argv[])
{
    int day, month, year;

    printf("Enter the day month and year: ");
    scanf("%d %d %d", &day, &month, &year);

    printf("number of days from the beginning of %d: %d", year, day + (month-
1)*30);

    return 0;
}
```

Q13 Write a C program top print the average of prime numbers between given two integers.

```c
#include <stdio.h>

int main() {
    int num1,num2;
    int sum = 0, count = 0, average;
    printf("Enter first number:");
    scanf("%d",&num1);
    printf("Enter second number:");
    scanf("%d",&num2);

    for(int i=num1; i<num2; i++){
        for(int j=2; j<=i; j++){
            if(j==i){
                sum+=i;
                count++;
            }else if(i%j==0){
                break;
            }
        }
    }
    average=sum/count;
    printf("Average = %d", average);

    return 0;
}
```

Q14 Write a C program to reverse an integer number. Example: If given int is 257 display 752

```c
#include <stdio.h>

int main()
{
    int num;
    printf("enter number : ");
    scanf("%d",&num);
    printf("reversed number: ");
    while(num > 0){
        printf("%d", num % 10);
        num = num / 10;
    }
}
```

Q15. Write a C program to count the number of prime numbers less than a given positive number.

```c
#include <stdio.h>

int main()
{
    int count = 0;
    int num = 2;
    int n;
    printf("enter a number: ");
    scanf("%d", &n);

    while (count <= n)
    {
        int flag = 1;

        for (int i = 2; i * i <= num; i++) {
            if (num % i == 0) {
                flag = 0;
                break;
            }
        }

        if (flag) {
            count++;
        }
        num++;
    }

    printf("number of prime numbers less than %d: %d\n", n, count);

    return 0;
}
```

Q16 Write a C program to count the number of days from the beginning of a year when a data is given fort he same year. Example: If given date is 25.7.2020, next day is 26.7.2020. You can assume that all months are 30 days.

```c
#include <stdio.h>

int main(int argc, char const *argv[])
{
    int day, month, year;

    printf("Enter the day month and year: ");
    scanf("%d %d %d", &day, &month, &year);

    printf("number of days from the beginning of %d: %d", year, day + (month-
1)*30);

    return 0;
}
```