Assignment-1

BY-U20CS110

Question 1:

1.h

```
//1.h

int decimal_to_unsigned_binary_U20CS110(int d)
{
    int mul = 1, res = 0;
    while (d)
    {
        res += mul * (d % 2);
        mul *= 10;
        d /= 2;
    }
    return res;
}
```

Question 2

2.h

```
//2.h

int binary_to_octal_U20CS110(int b)
{
    int temp, mul = 1, res = 0;
    while (b)
    {
        temp = b % 1000;
        temp = (temp / 100) * 4 + ((temp % 100) / 10) * 2 + (temp % 10) * 1;
        res += temp * mul;
        mul *= 10;
        b /= 1000;
    }
    return res;
}
```

Question 3

3.h

```
//3.h
```

```
int binary_to_decimal(int b)
{
    int res = 0, temp, mul = 1;
    while (b)
    {
        temp = b % 10;
        res += mul * temp;
        mul += 2;
        b /= 10;
    }
    return res;
}
int decimal_to_unsigned_binary(int d)
{
    int mul = 1, res = 0;
    while (d)
    {
        res += mul * (d % 2);
        mul *= 10;
        d /= 2;
    }
    return res;
}
int subtraction_unsigned_binary_numbers_U20CS110(int b1, int b2)
{
    int d1 = binary_to_decimal(b1);
    int d2 = binary_to_decimal(b2);
    int res;
    if (d1 > d2)
        res = d1 - d2;
    else
        res = 0;
    return decimal_to_unsigned_binary(res);
}
```

Question 4:

4.h

```
//4.h

int bin_to_dec(int b)
{
    int res = 0, temp, mul = 1;
    while (b)
    {
        temp = b % 10;
```

```
        res += mul * temp;
        mul += 2;
        b /= 10;
    }
    return res;
}
int decimal_to_binary(int d)
{
    int mul = 1, res = 0;
    while (d)
    {
        res += mul * (d % 2);
        mul *= 10;
        d /= 2;
    }
    return res;
}
int subtraction_signed_binary_numbers_U20CS110(int b1, int b2)
{
    int res = 0;
    int is_b1_neg = b1 / 1e7;
    int is_b2_neg = b2 / 1e7;
    int d1 = bin_to_dec(b1 % 10000000);
    int d2 = bin_to_dec(b2 % 10000000);
    int diff = d1 - d2;

    if (diff < 0)
    {
        res = decimal_to_binary(-1 * diff);
        res += 10000000;
    }
    else
    {
        res = decimal_to_binary(diff);
    }
    return res;
}
```

Single C input file

Main.c

```
#include <stdio.h>

#include "1.h"
#include "2.h"
```

```c
#include "3.h"
//Main.c

#include "4.h"

int main()
{
    //problem 1
    int n, b;
    printf("Enter your decimal number: ");
    scanf("%d", &n);
    b = decimal_to_unsigned_binary_U20CS110(n);
    printf("Its binary number is: %d \n", b);

    //problem 2
    int o = binary_to_octal_U20CS110(b);
    printf("Its Octal number is: %d \n", o);

    //problem 3
    int b1, b2;
    printf("Enter the 2 binary numbers: ");
    scanf("%d %d", &b1, &b2);
    int res = subtraction_unsigned_binary_numbers_U20CS110(b1, b2);
    printf("After subtraction of 2 unsigned binary result is: %d \n", res);

    //problem 4
    printf("Enter the 2 binary numbers: ");
    scanf("%d %d", &b1, &b2);
    res = subtraction_signed_binary_numbers_U20CS110(b1, b2);
    printf("After subtraction of 2 signed binary result is: %d \n", res);
}
```

OUTPUT SCREEN SHOT

```
PS C:\Krishna Pandey\c by vs> cd "c:\Krishna Pandey\c by vs\assign1 co\" ; if ($?) { gcc main.c -o main } ; if ($?) { .\main }
Enter your decimal number: 65
Its binary number is: 1000001
Its Octal number is: 101
Enter the 2 binary numbers: 1110  1001
After subtraction of 2 unsigned binary result is: 111
Enter the 2 binary numbers: 1101   1010
After subtraction of 2 signed binary result is: 11
PS C:\Krishna Pandey\c by vs\assign1 co>
```