ASSIGNMENT-2

Name: Hemanshi Mahla

Roll number: A028

Admission Number: U20CS028

Subject: CO

Question.) Take two decimal numbers and multiply them after converting to unsigned binary numbers.

Answer:

Header file:

*int* power(*int* *a*, *int* *b*)

{

*int* ans=1;

    for(*int* i=0;i<*b*;i++)

    {

        ans\*=*a*;

    }

    return ans;

}

// decimal to binary

*long* *long* *int* dtob(*long* *long* *int* *decimal*)

{

*long* *long* *int* binary=0,x=1;

       while((x\*2)<=*decimal*)

            x\*=2;

       while(x>0)

       {

*long* *long* *int* a=*decimal*/x;

*decimal*-=a\*x;

            x/=2;

            binary=binary\*10+a;

       }

    return binary;

}

// binary to decimal

*long* *long* *int* btod(*long* *long* *int* *binary*)

{

*long* *long* *int* decimal=0,x=1;

    while(x>0)

    {

*long* *long* *int* a=*binary*%10;

        decimal+=x\*a;

        x\*=2;

*binary*/=10;

    }

    return decimal;

}

// ass2

*long* *long* addition\_unsigned\_binary\_numbers\_U20CS028(*long* *long* *binary1*,*long* *long* *binary2*)

{

*long* *long* *int* answer=0,i=0,reminder=0;

    while(*binary1*>0 || *binary2*>0)

    {

*long* *long* *int* add=*binary1*%10 + *binary2*%10 + reminder;

        answer=answer+ (add%2)\*power(10,i);

        reminder=add/2;

        i++;

*binary1*/=10;

*binary2*/=10;

    }

    if(reminder==1)

        return answer+power(10,i);

    return answer;

}

*long* *long* *int* multiplication\_unsigned\_binary\_numbers\_U20CS028(*int* *decimal1*,*int* *decimal2*)

{

*int* sum=0;

    if(*decimal1*>=*decimal2*)

    {

*long* *long* *int* bin1=dtob(*decimal1*);

        for(*int* i=0;i<*decimal2*;i++)

    {

        sum=addition\_unsigned\_binary\_numbers\_U20CS028(sum,bin1);

    }

    }

    else if(*decimal1*<*decimal2*)

    {

*long* *long* *int* bin2=dtob(*decimal2*);

        for(*int* i=0;i<*decimal1*;i++)

        {

            sum=addition\_unsigned\_binary\_numbers\_U20CS028(sum,bin2);

        }

    }

    return sum;

}

C file:

#include <stdio.h>

#include <stdlib.h>

#include "coa2.h"

*int* main(*int* *argc*, *char* \**d*[])

{

*int* decimal1 = atoi(*d*[1]);

*int* decimal2= atoi(*d*[2]);

*long* *long* *int* b=multiplication\_unsigned\_binary\_numbers\_U20CS028(decimal1,decimal2);

*int* decimal=btod(b);

    printf("The multiplication of %d and %d in binary is %lld and indecimal is %d.\n",decimal1,decimal2,b,decimal);

}

Output:

