U19CS076 ASSIGNMENT 5

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#include <stdio.h>

#include <conio.h>

#include <math.h>


int a=0,b=0,c=0,com[5]={1,0,0,0,0},s=0;

int anum[5]={0},anumcp[5] ={0},bnum[5]={0};

int acomp[5]={0},bcomp[5]={0},rem[5]={0},quo[5]={0},res[5]={0};


void binary(){

    a = fabs(a);

    b = fabs(b);

    int r, r2, i, temp;

    for(i = 0; i < 5; i++){

        r = a % 2;

        a = a / 2;

        r2 = b % 2;

        b = b / 2;

        anum[i] = r;

        anumcp[i] = r;

        bnum[i] = r2;

        if(r2 == 0){                    //finding one s complement

            bcomp[i] = 1;

        }
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        if(r == 0){
            acomp[i] =1;
        }
    }
  //part for two's complementing
  c = 0;
  for( i = 0; i < 5; i++){
        res[i] = com[i]+ bcomp[i] + c;
        if(res[i]>=2){
            c = 1;
        }
        else
            c = 0;
        res[i] = res[i]%2;
    }
  for(i = 4; i>= 0; i--){
    bcomp[i] = res[i];
  }
}
void add(int num[]){
    int i;
    c = 0;
    for( i = 0; i < 5; i++){
        res[i] = rem[i]+ num[i] + c;
        if(res[i]>=2){
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            c = 1;
        }
        else
            c = 0;
        res[i] = res[i]%2;
    }
    for(i = 4; i>= 0; i--){
        rem[i] = res[i];
                    }
}
void shl(){//for shift left
    int i;
    for(i = 4; i > 0  ; i--){//shift the remainder
        rem[i] = rem[i-1];
    }
    rem[0] = anumcp[4];
    for(i = 4; i > 0  ; i--){//shift the remtient
        anumcp[i] = anumcp[i-1];
    }
    anumcp[0] = 0;

}

void main(){
```

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int i;
printf("\t\tRESTORING DIVISION ALGORITHM");
printf("\nEnter two numbers to multiply: ");
printf("\nBoth must be less than 16");
//simulating for two numbers each below 16
do{
    printf("\nEnter A: ");
    scanf("%d",&a);
    printf("Enter B: ");
    scanf("%d",&b);
}while(a>=16 || b>=16);


if(a*b <0){
    s = 1;
}

binary();
printf("\n\nUnsigned Binary Equivalents are: ");
printf("\nA = ");
for(i = 4; i>= 0; i--){
    printf("%d",anum[i]);
}
printf("\nB = ");
for(i = 4; i>= 0; i--){
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    printf("%d",bnum[i]);
}
printf("\nB'+ 1 = ");
for(i = 4; i>= 0; i--){
    printf("%d",bcomp[i]);
}
printf("\n\n-->");
//division part
shl();
for(i=0;i<5;i++){

    add(bcomp);      //to subtract B
    if(rem[4]==1){//simply add for restoring
        anumcp[0] = 0;
        add(bnum);
    }
    else{
        anumcp[0] = 1;
    }
    if(i<4)
        shl();

}

printf("\nRemainder is = ");int decimal_val=0;
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    for(i = 4; i>= 0; i--){
        printf("%d",rem[i]);
        decimal_val = decimal_val + rem[i] *pow(2,i);
    }
    printf("\nQuotient is = ");int q=0;
    for(i = 4; i>= 0; i--){
        printf("%d",anumcp[i]);
         q = q + anumcp[i] *pow(2,i);
    }

   printf("\nDecimal value of reminder is %d",decimal_val);
   printf("\nDecimal value of quotient is %d",q);

          getch();
}
```
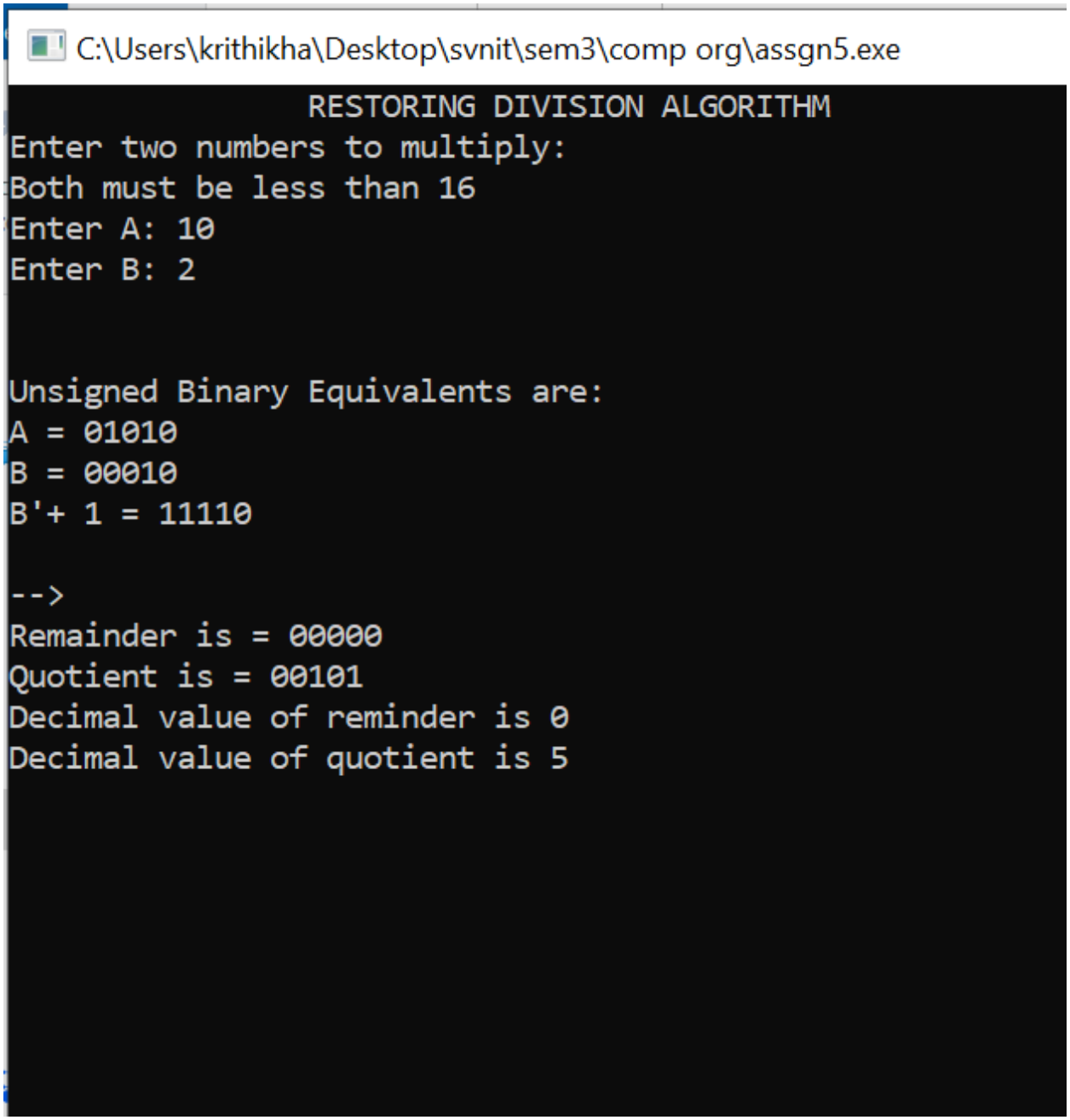
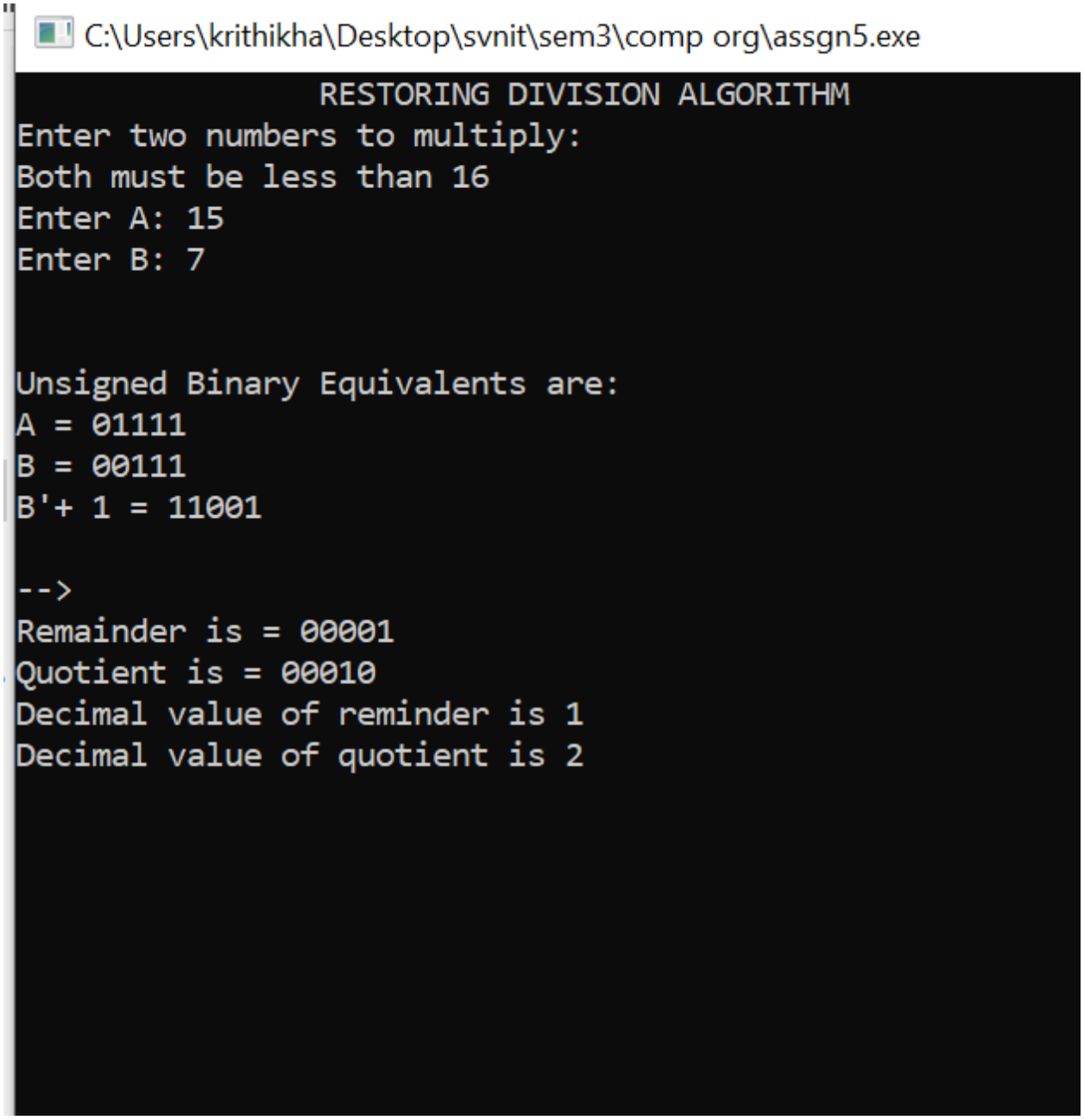


C:\Users\krithikha\Desktop\svnit\sem3\comp org\assgn5.exe
RESTORING DIVISION ALGORITHM
Enter two numbers to multiply:
Both must be less than 16
Enter A: 10
Enter B: 2
Unsigned Binary Equivalents are:
A = 01010
B = 00010
B'+ 1 = 11110
-->
Remainder is = 00000
Quotient is = 00101
Decimal value of reminder is 0
Decimal value of quotient is 5


C:\Users\krithikha\Desktop\svnit\sem3\comp org\assgn5.exe
RESTORING DIVISION ALGORITHM
Enter two numbers to multiply:
Both must be less than 16
Enter A: 15
Enter B: 7
Unsigned Binary Equivalents are:
A = 01111
B = 00111
B'+ 1 = 11001
-->
Remainder is = 00001
Quotient is = 00010
Decimal value of reminder is 1
Decimal value of quotient is 2