QUESTION 3.1

Kemal Efe Çırakoğlu
23111012001

```c
#include <stdio.h>

int main() {
    float a, b, sum = 0;
    for (a = 1; a <= 50; a++) {
        sum += 1 / a;
    }
    printf("Answer for a is %.3f\n", sum);
    sum = 0;
    for (a = 1; a <= 6; a++) {
        for (b = 1; b <= 10; b++) {
            sum += 1 / (a + b);
        }
    }
    printf("Answer for b is %.4f", sum);

}
```

```
Answer for a is 4.499
Answer for b is 8.1037
--------------------------------
Process exited after 0.08881 seconds with return value
Press any key to continue . . .
```

QUESTION 3.2

```c
#include <stdio.h>

int main(){
    int x1,x2,temp;
    printf("Enter 2 values\n");
    printf("Enter first integer\n");
    scanf("%d",&x1);
    printf("Enter second integer\n");
    scanf("%d",&x2);

    if(x1>x2){//x2 is larger value
        temp = x2;
        x2 = x1;
        x1 = temp;
    }

    int i,sum=0;

    for(i=x1/5+1;i<x2/5.0;i++){
```

```
Enter 2 values
Enter first integer
5
Enter second integer
26
The sum of numbers that can divisible with 5 between 5 and 26 is 70
--------------------------------
Process exited after 5.19 seconds with return value 0
Press any key to continue . . .
```

```
        sum+=i;
    }
    sum *=5;

    printf("The sum of numbers that can divisible with 5 between %d and %d is %d",x1,x2,sum);

    return 0;
}
```

QUESTION 3.3

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

double fact(int n){
    int i,mult=1;
    for(i=n;i>=1;i--){
        mult *= i;
    }
    return mult;
}


double e(int N){
    int i;
    double sum=0;
    for(i=0;i<=N;i++){
        sum += 1.0/fact(i);
    }
    return sum;

}

double etox(int N,int x){
    int i;
    double sum=0;
    for(i=0;i<=N;i++){
        sum += pow(x,i)/fact(i);
    }
    return sum;
```

```
Enter N and x for e and e^x
Enter N:10
Enter x:2
e for N = 10 : 2.718282
e to the power 2 for N = 10 : 7.388995
--------------------------------
Process exited after 3.501 seconds with return value 0
Press any key to continue . . .
```

```
}

int main(){

    int N,x;
    printf("Enter N and x for e and e^x\n");
    printf("Enter N:");
    scanf("%d",&N);
    printf("Enter x:");
    scanf("%d",&x);
    printf("e for N = %d : %lf\n",N,e(N));
    printf("e to the power %d for N = %d : %lf",x,N,etox(N,x));

    return 0;
}
```

QUESTION 3.4

```
#include <stdio.h>

double comb(int n,int k){
    double memo[n+1][k+1];
    int i,j;
    for(i=0;i<=n;i++){
        for(j=(i<= n-k ? 0 : i - n + k);j <= (i < k ? i :
k);j++){
            if(j==i || j==0){
                memo[i][j] = 1;
            }else{
                memo[i][j] = memo[i-1][j] + memo[i-1][j-1];
            }
        }
    }
    return memo[n][k];
}


int main(){
    int x,r;
    while(1){
        printf("Enter in format C(x,r)(to close program enter 0)\n");
```

```
Enter in format C(x,r)(to close program enter 0)
Enter x:10
Enter r:5
C(10,5) = 252
Enter in format C(x,r)(to close program enter 0)
Enter x:-5
You must enter a positive number.Enter in format C(x,r)(to close program enter 0)
Enter x:5
Enter r:7
r can not be bigger than x
Enter in format C(x,r)(to close program enter 0)
Enter x:0
Program is terminated

--------------------------------
Process exited after 16.62 seconds with return value 1
Press any key to continue . . .
```

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

        if(x<0){
            printf("You must enter a positive number.");
            continue;
        }else if(x==0){
            printf("Program is terminated\n");
            return 1;
        }

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

        if(r<0){
            printf("You must enter a positive number.");
            continue;
        }else if(r==0){
            printf("Program is terminated\n");
            return 1;
        }

        if(r>x){
            printf("r can not be bigger than x\n");
            continue;
        }

        printf("C(%d,%d) = %.0lf\n",x,r,comb(x,r));



    }
    return 0;
}
```

QUESTION 3.5

```
#include <stdio.h>


int fib(int n){
```

```
    int n_1=1,n_2=0,i,sum;
    if(n<2){
        return n;
    }else{
        for(i=2;i<=n;i++){
            sum = n_1 + n_2;
            n_2 = n_1;
            n_1 = sum;
        }
        return n_1;
    }
}

int main(){
    int i,sum=0,memo;
    printf("The first 10 elements of the Fibonacci series:\n");
    for(i=0;i<10;i++){
        memo = fib(i);
        printf("%d,",memo);
        sum += memo;
    }
    printf("\n");

    printf("Sum of them is %d.",sum);
}
```

```
The first 10 elements of the Fibonacci series:
0,1,1,2,3,5,8,13,21,34,
Sum of them is 88.
--------------------------------
Process exited after 0.08003 seconds with return value 18
Press any key to continue . . .
```

QUESTION 3.6

```
#include <stdio.h>

int mutlak(int sayi){
    return (sayi>=0 ? sayi:-sayi);
}

int main(){
    int x,y,z=5,k=2*z+1;
    for(y=0;y<z;y++){
        for(x=0;x<k;x++){
            if(y<mutlak(x-z)){
                printf(" ");
            }else{
```

```
    *
   ***
  *****
 *******
*********

--------------------------------
Process exited after 0.09099 seconds with return value 0
Press any key to continue . . .
```

```
                printf("*");
            }
        }
        printf("\n");
    }
    return 0;
}
```

QUESTION 3.7

```
#include <stdio.h>

double abs(double a){
    return (a<0?-a:a);
}

int main(){
    int n,x,y,w,r;
    while(1){
        printf("Enter a positive integer:");
        scanf("%d",&n);
        if (n<0){
            printf("Enter a non-negative number\n");
            continue;
        }else{
            break;
        }
    }
    w = (n%2==0?2*n:2*n-1);
    r = (w - 1)/2.0;
    for(y=0;y<n;y++){
        for(x=0;x<w;x++){
            if(abs(r-x)<y+1){
                printf("%d",(int)(y+1-abs(r-x)));
            }else{
                printf(" ");
            }
        }
        printf("\n");
    }
}
```

```
Enter a positive integer:5
    1
   121
  12321
 1234321
123454321

--------------------------------
Process exited after 8.678 seconds with return value 5
Press any key to continue . . .
```

```
Enter a positive integer:4
   1
  121
 12321
1234321

--------------------------------
Process exited after 2.936 seconds with return value 4
Press any key to continue . . .
```

Kemal Efe Çırakoğlu
23111012001