QUESTION 4.1

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```c
#include <stdio.h>

float area(float a,float b){
    return(a*b);
}

int main(){
    float a,b;
    while(1){
        printf("Enter a for area:");
        scanf("%f",&a);
        if(a<=0){
            printf("You entred non-valid value. Program will be
terminated!!!\n");
            break;
        }

        printf("Enter b for area:");
        scanf("%f",&b);
        if(b<=0){
            printf("You entred non-valid value. Program will be terminated!!!\n");
            break;
        }

        printf("Area of rectangle is %f\n",area(a,b));

    }
    return 0;
}
```

```
Enter a for area:5
Enter b for area:4
Area of rectangle is 20.000000
Enter a for area:6
Enter b for area:2
Area of rectangle is 12.000000
Enter a for area:0
You entred non-valid value. Program will be terminated!!!

--------------------------------
Process exited after 5.304 seconds with return value 0
Press any key to continue . . .
```

QUESTION 4.2

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

double rad(double degree){return degree*M_PI/180.0;}
double dgr(double radyan){return radyan * 180.0 / M_PI;}

double maxfunc(double arr[],int len){
```

```c
    int i;
    double max = arr[len-1];
    for(i = len - 1;i>= 0; i--){
        if(arr[i]>max){
            max = arr[i];
        }
    }
    return max;
}

void costhrm(double a,double b,double degree){
    degree = rad(degree);
    double c = sqrt(a*a + b*b -2*a*b*cos(degree));
    double k = c / sin(degree);
    double lenghts[3] = {a,b,c};
    double degree1 = dgr(asin(b/k));
    double degree2 = dgr(asin(a/k));

    double maxlenght = maxfunc(lenghts,3);

    if(maxlenght == a){
        if(degree1+degree<90){
            degree2 = 180 - degree2;
        }
    }else if(maxlenght == b){
        if(degree2+degree<90){
            degree1 = 180 - degree1;
        }
    }
    printf("Lenght of other edge is %lf\n",c);
    printf("Other angles are %lf and %lf",degree1,degree2);
}


int main(){
    double a,b,degree;
    printf("Please enter a,b,and degree for other values.\n");
    printf("Enter a:");
    scanf("%lf",&a);
    printf("Enter b:");
    scanf("%lf",&b);
```

```
Please enter a,b,and degree for other values.
Enter a:10
Enter b:20
Enter degree:30
Lenght of other edge is 12.393137
Other angles are 126.206023 and 23.793977
--------------------------------
Process exited after 3.865 seconds with return value 0
Press any key to continue . . .
```

```c
    printf("Enter degree:");
    scanf("%lf",&degree);

    costhrm(a,b,degree);

    return 0;
}
```

QUESTION 4.3

```c
#include <stdio.h>


double gpa(double mid1,double final1){
    return (mid1+ final1)/50.0;
}

int main(){
    int i,j;
    double mid1,final1,mid2,final2;
    for(i = 1; i<4;i++){
        printf("Enter %d. students 1. courses midterm grade:",i);
        scanf("%lf",&mid1);
        printf("Enter %d. students 1. courses final grade:",i);
        scanf("%lf",&final1);
        printf("Enter %d. students 2. courses midterm grade:",i);
        scanf("%lf",&mid2);
        printf("Enter %d. students 2. courses final grade:",i);
        scanf("%lf",&final2);
        printf("%d. students 1. courses gpa is %lf\n",i,gpa(mid1,final1));
        printf("%d. students 2. courses gpa is %lf\n",i,gpa(mid2,final2));
    }


    return 0;
}
```

```
Enter 1. students 1. courses midterm grade:50
Enter 1. students 1. courses final grade:60
Enter 1. students 2. courses midterm grade:100
Enter 1. students 2. courses final grade:21
1. students 1. courses gpa is 2.200000
1. students 2. courses gpa is 2.420000
Enter 2. students 1. courses midterm grade:32
Enter 2. students 1. courses final grade:35
Enter 2. students 2. courses midterm grade:74
Enter 2. students 2. courses final grade:85
2. students 1. courses gpa is 1.340000
2. students 2. courses gpa is 3.180000
Enter 3. students 1. courses midterm grade:96
Enter 3. students 1. courses final grade:41
Enter 3. students 2. courses midterm grade:52
Enter 3. students 2. courses final grade:63
3. students 1. courses gpa is 2.740000
3. students 2. courses gpa is 2.300000

--------------------------------
Process exited after 13.25 seconds with return value 0
Press any key to continue . . .
```

QUESTION 4.4

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

```c
#include <math.h>


int isPrime(double n){
    int i;

    if(n<=1){return 0;}

    for(i = 2;i<=sqrt(n);i++){
        if((int)(n)%i==0){
            return 0;
        }
    }
    return 1;
}


double sumoffactors(int n){
    double sum  = 0;
    int i;
    for(i=1;i<=sqrt(n);i++){
        if(n%i==0){
            if(i*i == n){
                sum+=i;
            }else{
             sum += i + n/i;
            }

        }
    }

    if(n==1)sum=1;

    return sum;
}

int main(){
    double input;
    while(1){
        printf("Please enter a number:");
        scanf("%lf",&input);
        if(input<=0){
```

```
Please enter a number:10
10.000000 is not prime number
Sum of factors of 10.000000 is 18.000000
Please enter a number:11
11.000000 is prime number
Please enter a number:20
20.000000 is not prime number
Sum of factors of 20.000000 is 42.000000
Please enter a number:1001
1001.000000 is not prime number
Sum of factors of 1001.000000 is 1344.000000
Please enter a number:10001
10001.000000 is not prime number
Sum of factors of 10001.000000 is 10212.000000
Please enter a number:0
You entered invalid number program will be terminated!!!

--------------------------------
Process exited after 22.39 seconds with return value 0
Press any key to continue . . .
```

```
            break;
        }
        if(isPrime(input)==1){
            printf("%lf is prime number\n",input);
        }else{
            printf("%lf is not prime number\n",input);
            printf("Sum of factors of %lf is %lf\n",input,sumoffactors(input));
        }
    }
    printf("You entered invalid number program will be terminated!!!\n");
    return 0;
}
```

QUESTION 4.5

```
#include <stdio.h>

double calculatepayment(double h_in){
    double payment;
    if(h_in<=3){
        return 2;
    }else if(h_in>=24){
        return 10;
    }else{
        payment = 2 + (h_in-3)*0.5;
        return (payment>=10?10:payment);
    }
}

int main(){
    double sum = 0,time[3];
    int i;
    for(i = 0 ; i < 3 ; i++){
        printf("Please enter %d. costumer's parking time:",i+1);
        scanf("%lf",&time[i]);
    }

    for(i = 0 ; i < 3 ; i++){
        printf("%d. costumer : %.2lf TL\n",i+1,calculatepayment(time[i]));
        sum += calculatepayment(time[i]);
```

```
Please enter 1. costumer's parking time:50
Please enter 2. costumer's parking time:24
Please enter 3. costumer's parking time:8
1. costumer : 10.00 TL
2. costumer : 10.00 TL
3. costumer : 4.50 TL
Total revenue = 24.50
 TL
--------------------------------
Process exited after 5.027 seconds with return value 0
Press any key to continue . . .
```

```
    }
    printf("Total revenue = %.2lf\n TL",sum);

    return 0;
}
```

QUESTION 4.6

```
#include <stdio.h>

int sum_of_odds(int start, int stop){
    int sum=0;
    for(start = (start % 2 == 0 ? start + 1 : start);start <= stop;start+=2){
        sum += start;
    }
    return sum;
}


int main(){
    int first,second;
    printf("Please enter two numbers for range\n");
    printf("First number:");
    scanf("%d",&first);
    printf("Second number:");
    scanf("%d",&second);
    if(first<=second){
        printf("Sum of odds is %d\n",sum_of_odds(first,second));
    }else{
        printf("Sum of odds is %d\n",sum_of_odds(second,first));
    }

    return 0;
}
```

```
Please enter two numbers for range
First number:25
Second number:10
Sum of odds is 144

--------------------------------
Process exited after 3.619 seconds with return value 0
Press any key to continue . . .
```

QUESTION 4.7

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

```
double rad(double degree){return degree*M_PI/180.0;}

double mainmeasure(double x){
    return fmod(x,2*M_PI);
}

double fac(int n){
    double mult = 1;
    int i;
    for(i = 2;i<=n;i++){
        mult *= i;
    }
    return mult;
}


double sinx(double x){
    x = mainmeasure(x);
    if(x<-M_PI/2 || x>M_PI/2){
        x = M_PI - x;
    }
    int n;
    double sum=0;
    for(n=0;n<=5;n++){
        sum+=pow(-1,n)*pow(x,2*n+1)/fac(2*n+1);
    }
    return sum;
}

double cosx(double x){
    x = mainmeasure(x);
    if(x < 0 || x > M_PI){
        x = 2*M_PI - x;
    }
    int n;
    double sum=0;
    for(n=0;n<=6;n++){
        sum+=pow(-1,n)*pow(x,2*n)/fac(2*n);
    }
    return sum;
```

```
Enter x value for sin(x) and cos(x) as degree
50
sin(50.000000) = 0.766044
cos(50.000000) = 0.642788

--------------------------------
Process exited after 3.311 seconds with return value 0
Press any key to continue . . .
```

```c
}

int main(){
    double x;
    printf("Enter x value for sin(x) and cos(x) as degree\n");
    scanf("%lf",&x);

    printf("sin(%lf) = %lf\n",x,sinx(rad(x)));
    printf("cos(%lf) = %lf\n",x,cosx(rad(x)));

    return 0;
}
```

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