

QUESTION 4.1

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```
#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

```
#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){
```

```

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 . . .

```

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

costhrm(a,b,degree);

return 0;
}

```

QUESTION 4.3

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

```

double gpa(double mid1,double final1,double mid2,double final2){
    return (mid1 + mid2 + final1 + final2)/4.0;
}

```

```

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 gpa is
%lf\n",i,gpa(mid1,final1,mid2,final2));
    }
}

```

```

return 0;
}

```

QUESTION 4.4

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

```

Enter 1. students 1. courses midterm grade:10
Enter 1. students 1. courses final grade:20
Enter 1. students 2. courses midterm grade:50
Enter 1. students 2. courses final grade:60
1. students gpa is 35.000000
Enter 2. students 1. courses midterm grade:50
Enter 2. students 1. courses final grade:50
Enter 2. students 2. courses midterm grade:50
Enter 2. students 2. courses final grade:40
2. students gpa is 47.500000
Enter 3. students 1. courses midterm grade:10
Enter 3. students 1. courses final grade:10
Enter 3. students 2. courses midterm grade:20
Enter 3. students 2. courses final grade:78
3. students gpa is 29.500000

```

```

-----
Process exited after 8.372 seconds with return value 0
Press any key to continue . . .

```

```
#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 . . .

```
}  
  
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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