

CP 111 Computer Programming

2/2554 Section B01/B02

Lab 5 solution

1. Problem name: PolyTwo_Func

```
#include <stdio.h>

int PolyTwo_Func(int a,int b, int c, int x);

int main()
{
    int x,y,z,f;

        scanf("%d",&x);

        y=PolyTwo_Func(-3,2,-1,x);

        z=PolyTwo_Func(2,-5,4,y);

        f=PolyTwo_Func(3,8,7,z);

        printf("%d\n",f);

        return 0;
}

int PolyTwo_Func(int a,int b, int c, int x)
{
    int value;

        value=(a*x*x)+(b*x)+c;

        return(value);
}
```

2. Problem name: Exp_2

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

double My_Exp(double x,int n);

int main()
{
    double val,val2;
    int k,N;

    scanf("%d",&N);
    val=0;
    /* val2=0; This is just for testing with exp() */
    for(k=-N;k<=N;k++)
    {
        val=val+My_Exp(k,50);
        /* val2=val2+exp(k); This is just for testing with exp() */
    }
    printf("%.2f\n",val);
    /* printf("%.2f\n",val2); This is just for testing with exp() */

    return 0;
}

double My_Exp(double x,int n)
{
    double e_x,x_n,n_fact;
    int i;

    e_x=1;
    x_n=x;
    n_fact=1;
    for(i=1;i<=n;i++)
    {
        e_x=e_x+(x_n/n_fact);
        x_n=x_n*x;
        n_fact=n_fact*(i+1);
    }

    return(e_x);
}
```

3. Problem name: X_Figure

```
#include <stdio.h>

int main()
{
    int x,y,N;

    scanf("%d",&N);

    for(y=-N/2;y<=N/2;y++)
    {
        for(x=-N/2;x<=N/2;x++)
        {
            if(abs(x)==abs(y))
            {
                printf("O");
            }
            else
            {
                printf(".");
            }
        }
        printf("\n");
    }
    return 0;
}
```

4. Problem name: Tri_Area_Func

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

double Triangle_Area(double x1,double y1,
                    double x2, double y2,
                    double x3, double y3);
double dist(double x,double y, double xx, double yy);

int main()
{
    double x1,y1,x2,y2,x3,y3;

    double area;

    scanf("%lf %lf", &x1,&y1);
    scanf("%lf %lf", &x2,&y2);
    scanf("%lf %lf", &x3,&y3);

    area=Triangle_Area(x1,y1,x2,y2,x3,y3);

    printf("%.2f\n",area);

    return 0;
}

double Triangle_Area(double x1,double y1,
                    double x2, double y2,
                    double x3, double y3)
{
    double s,area;
    double a,b,c;
    a=dist(x1,y1,x2,y2);
    b=dist(x2,y2,x3,y3);
    c=dist(x1,y1,x3,y3);
    s=(a+b+c)/2;
    area=sqrt(s*(s-a)*(s-b)*(s-c));
    return (area);
}

double dist(double x,double y, double xx, double yy)
{
    double d,d2;
    d2=(x-xx)*(x-xx) + (y-yy)*(y-yy);
    d=sqrt(d2);
    return(d);
}
```

5. Problem name: Max_Tri_Area

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

double dist(double x,double y, double xx, double yy);
double Triangle_Area(double x1,double y1,
                    double x2, double y2,
                    double x3, double y3);

int main()
{
    int i,N;
    double x1,y1,x2,y2,x3,y3;
    double a,b,c;
    double area;
    double max_area;

    scanf("%d",&N);
    max_area=-1;
    for(i=0;i<N;i++)
    {
        scanf("%lf %lf %lf %lf %lf %lf", &x1,&y1,&x2,&y2,&x3,&y3);
        area=Triangle_Area(x1,y1,x2,y2,x3,y3);
        if(area>max_area)
            max_area=area;
    }

    printf("%.2f\n",max_area);

    return 0;
}

double Triangle_Area(double x1,double y1,
                    double x2, double y2,
                    double x3, double y3)
{
    double s,area;
    double a,b,c;
    a=dist(x1,y1,x2,y2);
    b=dist(x2,y2,x3,y3);
    c=dist(x1,y1,x3,y3);
    s=(a+b+c)/2;
    area=sqrt(s*(s-a)*(s-b)*(s-c));
    return (area);
}

double dist(double x,double y, double xx, double yy)
{
    double d,d2;
    d2=(x-xx)*(x-xx) + (y-yy)*(y-yy);
    d=sqrt(d2);
    return(d);
}
```

6. Problem name: Is_Prime_Func

```
#include <stdio.h>

int Is_Prime(int x);

int main()
{
    int i,N,a;

    scanf("%d",&N);

    for(i=2;i<=N;i++)
    {
        a=Is_Prime(i);
        if(a==1)
            printf("%d\n",i);
    }
    return 0;
}

int Is_Prime(int x)
{
    int i;

    for(i=2;i<x;i++)
    {
        if(x%i==0)
            break;
    }
    if(i==x)
        return 1;
    else
        return 0;
}
```