

CP 111 Computer Programming, 2/2554, Section B01/B02

Programming Homework 03 solution

1. Problem name: Straight_line

```
#include <stdio.h>

int main()
{
    int x1,y1,x2,y2,x3,y3;
    int dx12,dx13,dy12,dy13,dx23,dy23;
    double m12,m13,m23;

    scanf("%d %d",&x1,&y1);
    scanf("%d %d",&x2,&y2);
    scanf("%d %d",&x3,&y3);
    dx12=x1-x2;
    dy12=y1-y2;
    dx13=x1-x3;
    dy13=y1-y3;
    dx23=x2-x3;
    dy23=y2-y3;

    if(dx12!=0 && dx13!=0 && dx23!=0)
    {
        m12=(double)dy12/(double)dx12;
        m13=(double)dy13/(double)dx13;
        m23=(double)dy23/(double)dx23;
        if(m12==m13 && m12==m23)
            printf("YES");
        else
            printf("NO");
    }
    else if(dx12==0 && dx13==0 && dx23==0)
    {
        printf("YES");
    }
    else
    {
        printf("NO");
    }
    printf("\n");

    return 0;
}
```

2. Problem name: Perfect_number

```
#include <stdio.h>
int main()
{
    int i,x,sum;

    scanf("%d",&x);

    sum=0;          ;
    for(i=1;i<x;i++)
    {
        if(x%i==0)
        {
            sum=sum+i;
        }
    }
    if(sum==x)
        printf("%d is a perfect number.\n",x);
    else
        printf("%d is not a perfect number.\n",x);

    return 0;
}
```

3. Problem name: Second_largest

```
#include <stdio.h>
int main()
{
    int i,N,x,max1,max2;

    scanf("%d",&N);

    for(i=0;i<N;i++)
    {
        scanf("%d",&x);
        if(i==0){
            max1=x;
        }
        else if(i==1)
        {
            if(x>max1)
            {
                max2=max1;
                max1=x;
            }
            else{
                max2=x;
            }
        }
        else
        {
            if(x>max1)
            {
                max2=max1;
                max1=x;
            }
            else if(x>max2)
            {
                max2=x;
            }
        }
    }
    printf("%d\n",max2);

    return 0;
}
```

4. Problem name: LCM

```
#include <stdio.h>
int main()
{
    int x,y;
    int lcm_val;
    int i;
    int max;

    scanf("%d %d",&x,&y);
    if(x<y)
        max=y;
    else
        max=x;

    i=max;
    while(1)
    {
        if( (i%x==0) && (i%y==0) ){
            lcm_val=i;
            break;
        }
        i++;
    }

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

    return 0;
}
```

5. Problem name: Numeric_Triangle_2

```
int main()
{
    int N,i,j,x;

    scanf("%d",&N);
    x=1;
    for(i=1;i<=N;i++)
    {
        for(j=1;j<=i;j++)
        {
            printf("%d\t",x);
            x=x+1;
        }
        printf("\n");
    }
    return 0;
}
```

6. Problem name: Duplicated_entry

```
#include <stdio.h>

int main()
{
    int i,sum_input,val,entry;

    sum_input=0;
    for(i=0;i<16;i++)
    {
        scanf("%d",&val);
        sum_input=sum_input+val;
    }
    entry=sum_input-120; // 120 = 1+2+3+...+15

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

    return 0;
}
```

7. Problem name: sine_approx

```
#include <stdio.h>
#include <math.h>
int main()
{
    double sin_x, x, xp, fact, y;
    int k, n;

    scanf("%lf %d", &x, &n);

    x=x*(3.1416/180);
    xp= x;
    fact=1;
    sin_x = 0;
    for(k=1;k<=n;k++ )
    {
        if(k%2==1)
            sin_x=sin_x+(xp/fact);
        else
            sin_x=sin_x-(xp/fact);

        xp=xp*x*x;

        fact=fact*(2*k)*(2*k+1);
    }
    printf("%.6f\n", sin_x);
    return 0;
}
```

8. Problem name: sum_n

```
#include <stdio.h>
int main()
{
    int nstart,nstop,n,i,sum;

    scanf("%d %d %d",&nstart,&nstop,&n);
    sum=0;
    i=nstart;
    while(i<=nstop)
    {
        sum=sum+i;
        i=i+n;
    }
    printf("%d\n",sum);
    return 0;
}
```

9. Problem name: fibo_mai_pee (ฟีโบนัชชี) นำมาจาก codejom

```
#include <stdio.h>
int main()
{
    int m,n,i;
    int k,f_k,f_k_1,f_k_2,f_k_3,f_k_4;

    scanf("%d %d %d",&m,&n,&i);
    f_k_1=n;
    f_k_2=m;
    f_k_3=0; /* any value is okay. */
    f_k_4=0; /* any value is okay. */
    if(i==0)
        f_k=m;
    else if(i==1)
        f_k=n;
    else
    {
        for(k=2;k<=i;k++)
        {
            if((k/2)%2 == 1)
                f_k=f_k_1+f_k_2;
            else
                f_k=f_k_1-f_k_4;

            f_k_4=f_k_3;
            f_k_3=f_k_2;
            f_k_2=f_k_1;
            f_k_1=f_k;
        }
    }
    printf("%d\n",f_k);
    return 0;
}
```