C语言程序设计部分实验参考答案

实验2

```
#include <stdio.h>
int main(){//2-1-2
    int c,f=150;
    c=f*5/9-32*5/9;
    printf("fahr=%d, celsius=%d\n",f, c);
    return 0;
}
#include <stdio.h>
int main(){//2-1-3
    int c=26,f;
    f=c*9/5+32;
    printf("celsius=%d, fahr=%d\n",c, f);
    return 0;
}
#include <stdio.h>
int main(){//2-1-4
    int math=87,eng=72,comp=93;
    printf("math=%d, eng=%d, comp=%d, average=%d\n",math, eng, comp, (math+eng+comp)/3);
    return 0;
}
#include <stdio.h>
int main(){//2-1/5
    int n=152,a,b,c;
    c=n%10;
    b=(n/10)%10;
    a=n/100;
    printf("整数%d 的个位数字是%d, 十位数字是%d, 百位数字是%d\n",n, c, b, a);
    return 0;
}
#include <stdio.h>
int main(){//2-1-6
    int x=3,y;
    y=x*x;
    printf("%d=%d*%d\n",y,x,x);
    printf("%d*%d=%d\n",x,x,y);
    return 0;
}
#include <stdio.h>
int main(){//2-2-1
```

```
    double x, y;
    printf("Enter x:");
    scanf_s("%lf",&x);
    if(x!=0){
        y=1/x;
    }else{
        y=0;
    }
    printf("f(%.2f)=%.1f\n",x,y);
    return 0;
}
#include <stdio.h>
int main(){//2-2-2
    int celsius, fahr;
    fahr=100;
    celsius=5*(fahr-32)/9;
    printf("fahr=%d, celsius=%d\n",fahr,celsius);
    return 0;
}
#include <stdio.h>
int main(){//2-2-3
    double money, rate,x=1.0;
    int i,year;
    printf("Enter money, year and rate:");
    scanf("%lf %d %lf",&money,&year,&rate);
    for(i=1;i<=year;i++)
        x=x*(1+rate);
    printf("intrest=%.2f\n",money*x-money);
    return 0;
}
#include <stdio.h>
#include<math.h>
int main(){//2-2-4
    double x, y;
    printf("Enter x");
    scanf_s("%lf",&x);
    if(x<0.0)
        y=pow(x+1,2)+2*x+1/x;
    else
        y=sqrt(x);
    printf("f(%.2f)=%.2f\n",x,y);
    return 0;
}
#include <stdio.h>
```

```c
#include<math.h>
int main(){//2-2-5
    double x, y;
    printf("Enter x:");
    scanf_s("%lf",&x);
    if(x==10)
        y=1/x;
    else
        y=x;
    printf("f(%.2f)=%.1f\n",x,y);
    return 0;
}
#include <stdio.h>
int main(){//2-2-6
    int x, y;
    printf("Enter num1:");
    scanf_s("%d",&x);
    printf("Enter num2:");
    scanf_s("%d",&y);
    printf("%d+%d=%d\n",x,y,x+y);
    printf("%d-%d=%d\n",x,y,x-y);
    printf("%d*%d=%d\n",x,y,x*y);
    printf("%d/%d=%d\n",x,y,x/y);
    printf("%d%%d=%d\n",x,y,x%y);
    return 0;
}
#include <stdio.h>
int main(){//2-3-1
    int i,sum=0;
    for(i=1;i<=100;i++){
        sum=sum+i;
    }
    printf("sum=%d\n",sum);
    return 0;
}
#include <stdio.h>
int main(){//2-3-2
    int i,m,s=0;
    printf("Enter m:");
    scanf("%d",&m);
    for(i=m;i<=100;i++)
        s=s+i;
    printf("sum=%d\n",s);
    return 0;
```

```
}
#include <stdio.h>
int main(){//2-3-3
    int i,m,n;
    double s=0.0;
    printf("Enter m:");
    scanf("%d",&m);
    printf("Enter n:");
    scanf("%d",&n);
    for(i=m;i<=n;i++)
        s=s+1.0/i;
    printf("sum=%f\n",s);
    return 0;
}
#include <stdio.h>
int main(){//2-3-4
    int i,n;
    double s=0.0;
    printf("Enter n:");
    scanf("%d",&n);
    for(i=1;i<=n;i++)
        s=s+1.0/(2*i-1);
    printf("sum=%f\n",s);
    return 0;
}
#include <stdio.h>
int main(){//2-3-5
    int i,n;
    double s=1.0,t=1.0,sign=1.0;
    printf("Enter n:");
    scanf("%d",&n);
    for(i=1;i<n;i++){
        sign=-sign;
        t=(t+3);
        s=s+1/t*sign;
    }
    printf("sum=%.3f\n",s);
    return 0;
}
#include <stdio.h>
int main(){//2-3-6
    int  low, uper;
    double fahr,celsius;
    printf("Enter low:");
```

```
    scanf_s("%d",&low);
    printf("Enter uper:");
    scanf_s("%d",&uper);
    printf("fahr  celsius\n");
    for(fahr=low;fahr<=uper;fahr+=2){
        celsius=5.0/9.0*(fahr-32.0);
        printf("%3.0f %6.1f\n",fahr,celsius);
    }
    return 0;
}
#include <stdio.h>
int main(){//2-3-7
    int m, n, i;
    double p,sum=0.0;
    printf("Enter m:");
    scanf("%d",&m);
    printf("Enter n:");
    scanf("%d",&n);
    p=1.0;
    for(i=1;i<=m;i++)
        p=p*i;
    sum=sum+p;
    p=1.0;
    for(i=1;i<=n;i++)
        p=p*i;
    sum=sum+p;
    printf("sum=%.0f\n",sum);
    return 0;
}
#include <stdio.h>
int main(){//2-3-8
    int x, n,i;
    double p=1.0;
    printf("Enter x:");
    scanf("%d",&x);
    printf("Enter n:");
    scanf("%d",&n);
    for(i=1;i<=n;i++)
        p=p*x;
    printf("%d的%d次方是%.0f\n",x, n,p);
    return 0;
}
#include <stdio.h>
#include<math.h>
```

```c
int main(){//2-4-1
    int n,i;
    printf("Enter n:");
    scanf("%d",&n);
    for(i=0;i<=n;i++)
        printf("pow(3,%d)=%.0f\n",i,pow(3.0,i));
    return 0;
}
#include <stdio.h>
#include<math.h>
int main(){//2-4-4
    double sum=0.0,i;
    for(i=100;i<=1000;i++){
        sum+=sqrt(i);
    }
    printf("sum=%.2f\n",sum);
    return 0;
}//  return 0;
}
#include <stdio.h>
#include<math.h>
int main(){//2-2-5
    double x, y;
    printf("Enter x:");
    scanf_s("%lf",&x);
    if(x==10)
        y=1/x;
    else
        y=x;
    printf("f(%.2f)=%.1f\n",x,y);
    return 0;
}
#include <stdio.h>
int main(){//2-2-6
    int x, y;
    printf("Enter num1:");
    scanf_s("%d",&x);
    printf("Enter num2:");
    scanf_s("%d",&y);
    printf("%d+%d=%d\n",x,y,x+y);
    printf("%d-%d=%d\n",x,y,x-y);
    printf("%d*%d=%d\n",x,y,x*y);
    printf("%d/%d=%d\n",x,y,x/y);
    printf("%d%%d=%d\n",x,y,x%y);
```

```
    return 0;
}
#include <stdio.h>
int main(){//2-3-1
    int i,sum=0;
    for(i=1;i<=100;i++){
        sum=sum+i;
    }
    printf("sum=%d\n",sum);
    return 0;
}
#include <stdio.h>
int main(){//2-3-2
    int i,m,s=0;
    printf("Enter m:");
    scanf("%d",&m);
    for(i=m;i<=100;i++)
        s=s+i;
    printf("sum=%d\n",s);
    return 0;
}
#include <stdio.h>
int main(){//2-3-3
    int i,m,n;
    double s=0.0;
    printf("Enter m:");
    scanf("%d",&m);
    printf("Enter n:");
    scanf("%d",&n);
    for(i=m;i<=n;i++)
        s=s+1.0/i;
    printf("sum=%f\n",s);
    return 0;
}
#include <stdio.h>
int main(){//2-3-4
    int i,n;
    double s=0.0;
    printf("Enter n:");
    scanf("%d",&n);
    for(i=1;i<=n;i++)
        s=s+1.0/(2*i-1);
    printf("sum=%f\n",s);
    return 0;
```

```
}
#include <stdio.h>
int main(){//2-3-5
    int i,n;
    double s=1.0,t=1.0,sign=1.0;
    printf("Enter n:");
    scanf("%d",&n);
    for(i=1;i<n;i++){
        sign=-sign;
        t=(t+3);
        s=s+1/t*sign;
    }
    printf("sum=%.3f\n",s);
    return 0;
}
#include <stdio.h>
int main(){//2-3-6
    int  low, uper;
    double fahr,celsius;
    printf("Enter low:");
    scanf_s("%d",&low);
    printf("Enter uper:");
    scanf_s("%d",&uper);
    printf("fahr  celsius\n");
    for(fahr=low;fahr<=uper;fahr+=2){
        celsius=5.0/9.0*(fahr-32.0);
        printf("%3.0f %6.1f\n",fahr,celsius);
    }
    return 0;
}
#include <stdio.h>
int main(){//2-3-7
    int m, n, i;
    double p,sum=0.0;
    printf("Enter m:");
    scanf("%d",&m);
    printf("Enter n:");
    scanf("%d",&n);
    p=1.0;
    for(i=1;i<=m;i++)
        p=p*i;
    sum=sum+p;
    p=1.0;
    for(i=1;i<=n;i++)
```

```
            p=p*i;
        sum=sum+p;
        printf("sum=%.0f\n",sum);
        return 0;
}
#include <stdio.h>
int main(){//2-3-8
        int x, n,i;
        double p=1.0;
        printf("Enter x:");
        scanf("%d",&x);
        printf("Enter n:");
        scanf("%d",&n);
        for(i=1;i<=n;i++)
            p=p*x;
        printf("%d的%d次方是%.0f\n",x, n,p);
        return 0;
}
#include <stdio.h>
#include<math.h>
int main(){//2-4-1
        int n,i;
        printf("Enter n:");
        scanf("%d",&n);
        for(i=0;i<=n;i++)
            printf("pow(3,%d)=%.0f\n",i,pow(3.0,i));
        return 0;
}
#include <stdio.h>
#include<math.h>
int main(){//2-4-4
        double sum=0.0,i;
        for(i=100;i<=1000;i++){
            sum+=sqrt(i);
        }
        printf("sum=%.2f\n",sum);
        return 0;
}
```

实验 3

```
#include<stdio.h>
#include<math.h>
int main(){//3-1
        double a, b, c, d;
```

```
    printf("Enter a, b, c: ");
    scanf("%lf%lf%lf",&a,&b,&c);
    d=b*b-4*a*c;
    if(a==0)
        if(b==0)
            if(c==0)
                printf("系数均为，方程无意义！\n");
            else
                printf("a、b为，c不为，方程不成立！\n");
        else
            printf("x=%.2f\n",c/b);
    else
        if(d>=0){
            printf("x1=%.2f\n",(-b+sqrt(d))/(2*a));
            printf("x1=%.2f\n",(-b-sqrt(d))/(2*a));
        }else{
            printf("x1=%.2f+%.2fi\n",-b/(2*a),sqrt(-d)/(2*a));
            printf("x1=%.2f-%.2fi\n",-b/(2*a),sqrt(-d)/(2*a));
        }
    return 0;
}
#include<stdio.h>
int main(){//3-2
    int x,y;
    printf("Enter x: ");
    scanf("%d",&x);
    if(x<0)
        y=-1;
    else if(x==0)
        y=0;
    else
        y=1;
    printf("sign(%d)=%d\n",x,y);
    return 0;
}
#include<stdio.h>
int main(){//3-3
    int letter=0,blank=0,digit=0,other=0,i;
    char ch;
    printf("Input 10 characters: ");
    for(i=0;i<10;i++){
        ch=getchar();
        if(ch>='a'&&ch<='z'||ch>='A'&&ch<='Z')
            letter++;
```

```
            else if(ch==' '||ch=='\n')
                blank++;
            else if(ch<='9'&&ch>='0')
                digit++;
            else
                other++;
        }
        printf("letter=%d, blank=%d, digit=%d, other=%d\n",letter,blank,digit,other);
        return 0;
}
#include<stdio.h>
int main(){//3-4
        char grade;
        printf("Input Grade: ");
        grade=getchar();
        switch(grade){
            case 'A':;
            case 'a':printf("%c对应的百分制成绩区间是~100\n",grade);break;
            case 'B':;
            case 'b':printf("%c对应的百分制成绩区间是~90\n",grade);break;
            case 'C':;
            case 'c':printf("%c对应的百分制成绩区间是~79\n",grade);break;
            case 'D':;
            case 'd':printf("%c对应的百分制成绩区间是~69\n",grade);break;
            case 'E':;
            case 'e':printf("%c对应的百分制成绩区间是~59\n",grade);break;
            default:printf("数据输入错误\n");
        }
        return 0;
}
#include<stdio.h>
int main(){//3-5
        int choice,count;
        for(count=0;count<5;count++){
            printf("[1]apple\n");
            printf("[2]pear\n");
            printf("[3]orange\n");
            printf("[4]grape\n");
            printf("[0]exit\n");
            printf("Enter your choice:");
            scanf("%d",&choice);
            switch(choice){
                case 0: return 0;
                case 1:printf("price is %.2f\n",3.0);break;
```

```
                case 2:printf("price is %.2f\n",2.5);break;
                case 3:printf("price is %.2f\n",4.1);break;
                case 4:printf("price is %.2f\n",10.2);break;
                default:printf("price is %.2f\n",0.0);
            }
        }
        return 0;
}
#include<stdio.h>
int main(){//3-6
        int i;
        double grade;
        for(i=0;i<5;i++){
            printf("Enter grade: ");
            scanf("%lf",&grade);
            if(grade<60.0)
                printf("Fail\n");
            else
                printf("Pass\n");
        }
        return 0;
}
#include<stdio.h>
#include<math.h>
int main(){//3-7
        double a,b,c,s;
        printf("Enter 3 sides of the triangle: ");
        scanf("%lf %lf %lf",&a,&b, &c);
        if(a+b>c&&a+c>b&&b+c>a){
            s=(a+b+c)/2;
            printf("area=%.2f; perimeter=%.2f\n",sqrt(s*(s-a)*(s-b)*(s-c)),a+b+c);
        }else
            printf("These sides do not correspond to a valid triangle\n");
        return 0;
}
#include<stdio.h>
int main(){//3-8
        double salary,rate;
        printf("Enter the salary: ");
        scanf("%lf",&salary);
        if(salary<=850)
            rate=0.0;
        else if(salary<=1350.0)
            rate=0.05;
```

```
    else if(salary<=2850.0)
        rate=0.1;
    else if(salary<=5850.0)
        rate=0.15;
    else
        rate=0.2;
    printf("tax=%.2f\n",rate*(salary-850));
    return 0;
}
#include<stdio.h>
int main(){//3-9
    int i,n,grade,a=0,b=0,c=0,d=0,e=0;
    printf("Enter n: ");
    scanf("%d",&n);
    for(i=0;i<n;i++){
        printf("Enter grade %d: ",i+1);
        scanf("%d",&grade);
        switch(grade/10){
            case 9:
            case 10:a++;break;
            case 8:b++;break;
            case 7:c++;break;
            case 6:d++;break;
            case 5:
            case 4:
            case 3:
            case 2:
            case 1:
            case 0:e++;break;
        }
    }
    printf("The number of A(90~100):%d\n",a);
    printf("The number of B(80~89):%d\n",b);
    printf("The number of C(70~79):%d\n",c);
    printf("The number of D(60~69):%d\n",d);
    printf("The number of E(0~59):%d\n",e);
    return 0;
}
#include<stdio.h>
int main(){//3-10
    char sign;
    int x,y;
    printf("输入x运算符y: ");
    scanf("%d%c%d",&x,&sign, &y);
```

```
    if(sign=='*')
        printf("%d * %d = %d\n",x,y,x*y);
    else if(sign=='/')
        printf("%d / %d = %d\n",x,y,x/y);
    else if(sign=='%')
        printf("%d Mod %d = %d\n",x,y,x%y);
    else
        printf("运算符输入错误！\n");
    return 0;
}
```

实验 4

```
#include<stdio.h>
#include<cmath>
int main(){//4-1-2
    int flag,denominator;
    double s,eps,item;
    printf("Input eps:");
    scanf("%lf",&eps);
    s=0.0;
    flag=1;
    denominator=1;
    item=1.0;
    while(fabs(item)>eps){
        item=flag*1.0/denominator;
        s=s+item;
        flag=-flag;
        denominator=denominator+3;
    }
    printf("s=%.6f\n",s);
    return 0;
}
#include<stdio.h>
int main(){//4-1-3
    int x,sum;
    sum=0;
    printf("Input integers:");
    scanf("%d",&x);
    while(x>0){
        if(x%2!=0)
        sum=sum+x;
        scanf("%d",&x);
    }
    printf("The sum of the odd numbers is %d\n",sum);
```

```
    return 0;
}
#include<stdio.h>
int main(){//4-1-4
    int num,count;
    printf("Input an integer:");
    scanf("%d",&num);
    count=0;
    do{
        num=num/10;
        count++;
    }while(num!=0);
    printf("count=%d\n",count);
    return 0;
}
#include<stdio.h>
int main(){//4-1-5
    int n,x,min,i;
    printf("Input n:");
    scanf("%d",&n);
    printf("Input numbers:");
    scanf("%d",&x);
    min=x;
    for(i=1;i<n;i++){
        scanf("%d",&x);
        if(x<min)
            min=x;
    }
    printf("min=%d\n",min);
    return 0;
}
int main(){//4-1-6
    int n,s=0,c=0;
    printf("Input an integer:");
    scanf("%d",&n);
    do{
        s+=n%10;
        n/=10;
        c++;
    }while(n);
    printf("count=%d, sum=%d\n",c,s);
    return 0;
}
#include<stdio.h>
```

```
int main(){//4-1-7
    double a,b,c,s=0.0;
    int i,n;
    printf("Input n:");
    scanf("%d",&n);
    for(a=1.0,b=1.0,i=0;i<n;i++,c=a+b,a=b,b=c)
        s+=(1.0+a/b);
    printf("s=%.2f\n",s);
    return 0;
}
#include<stdio.h>
int main(){//4-1-8
    int a,n,i,s=0,t=0;
    printf("Input a, n:");
    scanf("%d%d",&a,&n);
    for(i=0;i<n;i++){
        t=10*t+a;
        s+=t;
    }
    printf("s=%d\n",s);
    return 0;
}
#include<stdio.h>
int main(){//4-1-9
    int n,i;
    double h,sum=0.0;
    printf("Input height: ");
    scanf("%lf",&h);
    printf("Input n: ");
    scanf("%d",&n);
    sum+=h;
    for(i=1;i<=n;i++){
        sum+=h;
        h/=2.0;
    }
    printf("distance=%.1f\n",sum);
    printf("height=%.1f\n",h);
    return 0;
}
#include<stdio.h>
#include<math.h>
int main(){//4-2-2
    int m,n,i,j,st,c=0;
    printf("Input m: ");
```

```
    scanf("%d",&m);
    if(m==1)
        m++;
    printf("Input n: ");
    scanf("%d",&n);
    for(i=m;i<=n;i++){
        st=sqrt((double)i);
        for(j=2;j<=st;j++)
            if(!(i%j))
                break;
        if(j>st){
            printf("%d ",i);
            c++;
            if(!(c%6))
                printf("\n");
        }
    }
    return 0;
}
#include<stdio.h>
int main(){//4-2-3
    int money,f1,f2,f5,count=0;
    printf("Input money: ");
    scanf("%d",&money);
    for(f1=1;f1<=money-7;f1++)
        for(f2=1;f2<=money-6;f2++)
            for(f5=1;f5<=money-3;f5++)
                if(f1+2*f2+5*f5==money)
                    count++;
    printf("count=%d\n",count);
    for(f1=1;f1<=money-7;f1++)
        for(f2=1;f2<=money-6;f2++)
            for(f5=1;f5<=money-3;f5++)
                if(f1+2*f2+5*f5==money)
                    printf("fen5: %d fen2: %d fen1: %d\n",f5,f2,f1);

    return 0;
}
#include<stdio.h>
int main(){//4-2-4
    int m,n,k,a,b,c,tmp;
    printf("Input m: ");
    scanf("%d",&m);
    printf("Input n: ");
```

```
    scanf("%d",&n);
    for(k=m;k<=n;k++){
        tmp=k;
        a=tmp%10;
        tmp/=10;
        b=tmp%10;
        tmp/=10;
        c=tmp;
        if(a*a*a+b*b*b+c*c*c==k)
            printf("%d\t(%d*%d*%d+%d*%d*%d+%d*%d*%d=%d)\n",k,c,c,c,b,b,b,a,a,a,k);
    }
    return 0;
}
#include<stdio.h>
int main(){//4-2-5
    int i,j,s;
    for(i=1;i<=200;i++){
        s=1;
        for(j=2;j<=i/2;j++)
            if(i%j==0)
                s=s+j;
        if(s==i){
            printf("%d=1",i);
            for(j=2;j<=i/2;j++)
                if(i%j==0)
                    printf("+%d",j);
            printf("\n");
        }
    }
    return 0;
}
#include<stdio.h>//5-2
int sign(int x){
    if(x>0)
        return 1;
    if(x==0)
        return 0;
    return -1;
}
int main(){
    int x;
    printf("Enter x:");
    scanf("%d",&x);
    printf("sign(%d)=%d\n",x,sign(x));
```

```
    return 0;
}
#include<stdio.h>//5-3
int even(int x){
    return (x%2==0);
}
int main(){
    int x,s=0;
    printf("Input integers: ");
    scanf("%d",&x);
    while(x>0){
        if(!even(x))
            s+=x;
        scanf("%d",&x);
    }
    printf("The sum of the odd is %d\n",s);
    return 0;
}
#include<stdio.h>//5-4
#include<math.h>
double distance(double x1,double y1, double x2, double y2){
    return sqrt((x1-x2)*(x1-x2)+(y1-y2)*(y1-y2));
}
int main(){
    double x1, y1, x2, y2;
    printf("Input (x1, y1):");
    scanf("%lf%lf",&x1,&y1);
    printf("Input (x2, y2):");
    scanf("%lf%lf",&x2,&y2);
    printf("distance=%.2f\n",distance(x1,y1,x2, y2));
    return 0;
}
#include<stdio.h>//5-5
#include<math.h>
int prime(int m){
    int k,sqrtm=sqrt((double)m);
    for(k=2;k<=sqrtm;k++)
        if(m%k==0)
            return 0;
    return 1;
}
int main(){
    int m,n,c=0,s=0,k;
    printf("Input m:");
```

```
    scanf("%d",&m);
    printf("Input n:");
    scanf("%d",&n);
    for(k=(m==1?2:m);k<=n;k++)
        if(prime(k)){
            c++;
            s+=k;
        }
    printf("count=%d, sum=%d\n",c,s);
    return 0;
}
#include<stdio.h>//5-6
int countdigit(int number, int digit){
    int c=0;
    if(number<0)
        number=-number;
    do{
        if(number%10==digit)
            c++;
        number/=10;
    }while(number);
    return c;
}
int main(){
    int n;
    printf("Enter an integer:");
    scanf("%d",&n);
    printf("Number of digit 2: %d\n",countdigit(n,2));
    return 0;
}
#include<stdio.h>//5-7
int is(int n){
    int s=0,x,m=n;
    do{
        x=m%10;
        s+=x*x*x;
        m/=10;
    }while(m);
    if(s==n)
        return 1;
    return 0;
}
int main(){
    int m,n,i;
```

```
    printf("Input m:");
    scanf("%d",&m);
    printf("Input n:");
    scanf("%d",&n);
    for(i=m;i<=n;i++)
        if(is(i))
            printf("%d\n",i);
    return 0;
}
#include<stdio.h>//5-8
double fact(int n);
int main(void){
    int i;
    double sum=0.0;/*需要初始化为*/
    for(i=1;i<=10;i++)/*上界是*/
        sum=sum+fact(i);
    printf("1!+2!+...+10!=%f\n",sum);
    return 0;
}
double fact(int n){
    int i;
    double result=1.0;
    for(i=1;i<=n;i++)
        result=result*i;/*result中累积n!*/
    return result;
}
```

实验 7

```
#include<stdio.h>
int main(){//7-2-4
    int a[6][6],n,i,j,flag=1;
    printf("Input n:");
    scanf("%d",&n);
    printf("Input array:\n");
    for(i=0;i<n;i++)
        for(j=0;j<n;j++)
            scanf("%d",&a[i][j]);
    for(j=0;j<n-1;j++){
        for(i=j+1;i<n;i++)
            if(a[i][j]){
                flag=0;
                break;
```

```
            }
        if(flag==0)
            break;
    }
    if(flag==0)
        printf("No\n");
    else
        printf("Yes\n");
    return 0;
}
#include<stdio.h>
int main(){//7-2-6
    int a[6][6],n,i,j,row,col;
    printf("Input n:");
    scanf("%d",&n);
    printf("Input array:\n");
    for(i=0;i<n;i++)/*输入矩阵*/
        for(j=0;j<n;j++)
            scanf("%d",&a[i][j]);
    for(i=0;i<n;i++){/*对矩阵的每一行*/
        row=i;col=0;
        for(j=0;j<n;j++)/*找当前行的最大值元素a[row][col]*/
            if(a[i][j]>a[row][col]){
                col=j;
            }
        for(j=0;j<n;j++)/*检测a[row][col]是否为第col列的最小元素*/
            if(a[j][col]<a[row][col])
                break;
        if(j>=n){//找到鞍点元素a[row][col]
            printf("a[%d][%d]=%d\n",row,col,a[row][col]);
            break;
        }
    }
    if(i>=n)/*所有行都检测过没有找到鞍点*/
        printf("NO\n");
    return 0;
}
#include<stdio.h>
int main(){//7-3-2
    char c,s[80];
    int i,index=-1;
    printf("Input a character:");
    c=getchar();
    getchar();
```

```
    printf("Input a string:");
    gets(s);
    i=0;
    while(s[i]!='\0'){
        if(s[i]==c)
            index=i;
        i++;
    }
    if(index>-1)
        printf("index=%d\n",index);
    else
        printf("Not found\n");
    return 0;
}
#include<stdio.h>
int main(){//7-3-3
    char s[80];
    int i,upcase=0,count=0;
    printf("Input a string:");
    gets(s);
    i=0;
    while(s[i]!='\0'){
        if(s[i]>='A'&&s[i]<='Z'){
            upcase++;
            switch(s[i]){
                case 'A':
                case 'E':
                case 'I':
                case 'O':
                case 'U':count++;
            }
        }
        i++;
    }
    if(upcase)
        count=upcase-count;
    printf("count=%d\n",count);
    return 0;
}
#include<stdio.h>
int main(){//7-3-4
    char s[80];
    int i;
    printf("Input a string:");
```

```
    gets(s);
    i=0;
    while(s[i]!='\0'){
        if(s[i]>='A'&&s[i]<='Z')
            s[i]='Z'-(s[i]-'A');
        i++;
    }
    printf("After replaced: %s\n",s);
    return 0;
}
#include<stdio.h>
int main(){//7-3-5
    char s[80];
    int i,n=0;
    printf("Input a string:");
    gets(s);
    i=0;
    while(s[i]!='\0'){
        if(s[i]>='0'&&s[i]<='9'){
            n=n*16+s[i]-'0';
            i++;
            continue;
        }
        switch(s[i]){
            case 'a':
            case 'A':n=n*16+10;break;
            case 'b':
            case 'B':n=n*16+11;break;
            case 'c':
            case 'C':n=n*16+12;break;
            case 'd':
            case 'D':n=n*16+13;break;
            case 'e':
            case 'E':n=n*16+14;break;
            case 'f':
            case 'F':n=n*16+15;break;
        }
        i++;
    }
    printf("Hex=%d\n",n);
    return 0;
}
```

实验 8

```c
#include<stdio.h>//8-1-1
void move(int *, int, int);
int main(){
    int m, n, i, a[80], *p;
    printf("Input n, m:");
    scanf("%d%d",&n, &m);
    for(p=a,i=0;i<n;i++)
        scanf("%d",p+i);/*将&p++换成p+i*/
    move(a,n,m);
    printf("After moved:");
    for(i=0;i<n;i++)
        printf("%5d",a[i]);
    return 0;
}
void move(int *x,int n, int m){
    int i,j,k;
    for(i=0;i<m;i++){
        k=x[n-1];/*暂存x[n-1], 因为它将被覆盖*/
        for(j=n-1;j>0;j--)
            x[j]=x[j-1];/*设置断点*/
        x[0]=k;
    }
}
#include<stdio.h>//8-1-2
#include<stdlib.h>
int search(int *, int, int);
int main(){
    int *a,n,i,x,index;
    printf("Input n:");
    scanf("%d",&n);
    if((a=(int*)malloc(n*sizeof(int)))!=NULL)
        exit(1);
    printf("Input %d integers:",n);
    for(i=0;i<n;i++)
        scanf("%d",a+i);
    printf("Input x:");
    scanf("%d",&x);
    index=search(a,n,x);
    if(index==-1)
        printf("Not found\n");
    else
        printf("index=%d\n",index+1);
    free(a);
    return 0;
```

```
}
int search(int *a,int n,int x){
    int i;
    for(i=0;i<n;i++)
        if(a[i]==x)
            return i;
    return -1;
}
#include<stdio.h>//8-1-3
#include<stdlib.h>
void sort(int*,int);
int main(){
    int i,n,*a;
    printf("Input n:");
    scanf("%d",&n);
    if((a=(int*)malloc(n*sizeof(int)))!=NULL)
        exit(1);
    printf("Input %d integers:",n);
    for(i=0;i<n;i++)
        scanf("%d",a+i);
    sort(a,n);
    printf("After sorted the array is:");
    for(i=0;i<n;i++)
        printf("%d ",a[i]);
    printf("\n");
    return 0;
}
int max(int *a,int n){
    int i,index=0;
    for(i=1;i<n;i++)
        if(a[i]>a[index])
            index=i;
    return index;
}
void swap(int *x,int *y){
    int t=*x;
    *x=*y;
    *y=t;
}
void sort(int *a,int n){
    int i,j;
    for(i=n;i>0;i--){
        j=max(a,i);
        swap(a+i-1,a+j);
```

```
    }
}
#include<stdio.h>//8-1-4
#include<stdlib.h>
int main(){
    int n,i,total,token,*a;
    printf("Input n:");
    scanf("%d",&n);
    if((a=(int*)malloc(n*sizeof(int)))==NULL)
        exit(1);
    for(i=0;i<n;i++)
        a[i]=i+1;
    total=n;
    i=0;
    while(total>1){
        token=0;/*报数的当前值*/
        while(token<3){/*未出队的依次报数*/
            if(a[i]!=0)
                token++;
            if(token<3)/*未满m继续报数*/
                i=(i+1)%n;
        }
        a[i]=0;/*报到的出队*/
        i=(i+1)%n;
        total--;/*队中人数减*/
    }
    for(i=0;i<n;i++)
        if(a[i]!=0)
            break;
    printf("Last No. is: %d\n",a[i]);
    free(a);
    return 0;
}
#include<stdio.h>//8-2-2
#include<string.h>
int main(){
    char s[80],m[80];
    int length,max=0,i;
    printf("Input 5 strings: ");
    for(i=0;i<5;i++){
        scanf("%s",s);
        length=strlen(s);
        if(length>max){
            max=length;
```

```
                strcpy(m,s);
            }
        }
        printf("The longest is: %s\n",m);
        return 0;
}
#include<stdio.h>//8-2-3
#include<string.h>
void delchar(char *s,char c){
        int i=0;
        while(*s!='\0'){
            if(*s==c)/*遇到字符c*/
                strcpy(s,s+1);/*将该字符后的部分拷贝成从当前位置开始的串*/
            s++;
        }
}
int main(){
        char s[80],c;
        printf("Input a string: ");
        gets(s);
        printf("Input a char: ");
        scanf("%c",&c);
        delchar(s,c);
        printf("After deleted, the string is: %s\n",s);
        return 0;
}
#include<stdio.h>//8-2-4
#include<string.h>
void strmcpy(char *s, char *t, int m){
        strcpy(s,t+m-1);
}
int main(){
        char s[80],t[80];
        int m;
        printf("Input a string: ");
        gets(t);
        printf("Input a integer: ");
        scanf("%d",&m);
        strmcpy(s,t,m);
        printf("Output is: %s\n",s);
        return 0;
}
#include<stdio.h>//8-2-5
#include<string.h>
```

```
int is_sym(char *s){
    int i=0,j=strlen(s)-1;
    while(i<j){
        if(s[i]!=s[j])
            return 0;
        i++;
        j--;
    }
    return 1;
}
int main(){
    char s[80];
    printf("Input a string: ");
    gets(s);
    if(is_sym(s))
        printf("YES\n");
    else
        printf("NO\n");
    return 0;
}
#include<stdio.h>//8-2-6
int main(){
    char s[80];
    int up=0,low=0,space=0,digit=0,other=0,i;
    printf("Input a string: ");
    gets(s);
    for(i=0;s[i]!='\0';i++){
        if(s[i]>='A'&&s[i]<='Z'){
            up++;
            continue;
        }
        if(s[i]>='a'&&s[i]<='z'){
            low++;
            continue;
        }
        if(s[i]>='0'&&s[i]<='9'){
            digit++;
            continue;
        }
        if(s[i]==' '||s[i]=='\t'){
            space++;
            continue;
        }
        other++;
```

```
    }
    printf("大写字母个数为：%d\n小写字母个数为：%d\n空格个数为：%d\n数字个数为：%d\n其他字符个数为：%d\n",up,low,space,digit,other);
    return 0;
}
```

实验 9

```
#include<stdio.h>//9-2
int main(){
    struct{
        int hour,minit,second;
    }time;
    int n;
    printf("输入时间:");
    scanf("%d:%d:%d",&time.hour,&time.minit,&time.second);
    printf("输入秒:");
    scanf("%d",&n);
    time.second=time.second+n;
    time.minit+=time.second/60;
    time.second=time.second%60;
    time.hour+=time.minit/60;
    time.minit%=60;
    time.hour%=24;
    printf("新时间:%d:%d:%d\n",time.hour,time.minit,time.second);
    return 0;
}
#include<stdio.h>//9-3
int main(){
    struct student{
        int num;
        char name[20];
        double score;
    }stu;
    int n,i;
    double sum=0.0;
    printf("输入n:");
    scanf("%d",&n);
    for(i=0;i<n;i++){
        printf("输入%d个学生的学号、姓名和成绩:",i+1);
        scanf("%d%s%lf",&stu.num,stu.name,&stu.score);
        sum+=stu.score;
    }
    printf("平均成绩:%.2f\n",sum/n);
```

```
    return 0;
}
#include<stdio.h>//9-4
int main(){
    struct complex{
        int a,b;
    }x,y,z;
    printf("输入a1, a2, b1, b2:");
    scanf("%d%d%d%d",&x.a,&x.b,&y.a,&y.b);
    z.a=x.a*y.a-x.b*y.b;
    z.b=x.a*y.b+x.b*y.a;
    printf("(%d+%di)×(%d+%di)=%d+%di\n",x.a,x.b,y.a,y.b,z.a,z.b);
    return 0;
}
#include<stdio.h>//9-5
int main(){
    struct book{
        char name[80];
        double price;
    }abook,min,max;
    int n,i;
    printf("输入n:");
    scanf("%d",&n);
    min.price=10000;
    max.price=-1;
    for(i=0;i<n;i++){
        printf("输入第%d本书的名称和定价:",i+1);
        scanf("%s%lf",abook.name,&abook.price);
        if(min.price>abook.price)
            min=abook;
        if(max.price<abook.price)
            max=abook;
    }
    printf("价格最高的书: %s ,价格:%.1f\n",max.name,max.price);
    printf("价格最低的书: %s ,价格:%.1f\n",min.name,min.price);
    return 0;
}
#include<stdio.h>//9-6
int main(){
    struct addres{
        char name[20];
        int birthday;
        char phon[80];
    }person[10],tmp;
```

```
    int n,i,j,index;
    printf("输入n:");
    scanf("%d",&n);
    for(i=0;i<n;i++){
        printf("输入第%d个人的姓名、生日、电话号码:",i+1);
        scanf("%s%d%s",person[i].name,&person[i].birthday,person[i].phon);
    }
    for(i=0;i<n-1;i++){
        index=0;
        for(j=1;j<n-i;j++)
            if(person[j].birthday>person[index].birthday)
                index=j;
        tmp=person[n-i-1];
        person[n-i-1]=person[index];
        person[index]=tmp;
    }
    for(i=0;i<n;i++)
        printf("%s  %d  %s\n",person[i].name,person[i].birthday,person[i].phon);
    return 0;
}
#include<stdio.h>//9-7
struct date{
    int year,month,day;
};
int day_of_year(struct date date){
    int k,leap,d=date.day;
    int
tab[2][12]={{31,28,31,30,31,30,31,31,30,31,30,31},{31,29,31,30,31,30,31,31,30,31,30,31}};
    leap=(date.year%4==0&&date.year%100!=0||date.year%400==0);
    for(k=0;k<date.month-1;k++)
        d+=tab[leap][k];
    return d;
}
int main(){
    struct date date;
    printf("输入日期:");
    scanf("%d%d%d",&date.year,&date.month,&date.day);
    printf("该日期是%d年第%d天\n",date.year,day_of_year(date));
    return 0;
}
#include<stdio.h>//9-8
struct time{
    int hour,minit,second;
};
```

```
void chang_time(struct time* t,int n){
    t->second=t->second+n;
    t->minit+=t->second/60;
    t->second=t->second%60;
    t->hour+=t->minit/60;
    t->minit%=60;
    t->hour%=24;
}
int main(){
    struct time t;
    int n;
    printf("输入时间:");
    scanf("%d:%d:%d",&t.hour,&t.minit,&t.second);
    printf("输入秒:");
    scanf("%d",&n);
    chang_time(&t,n);
    printf("新时间:%d:%d:%d\n",t.hour,t.minit,t.second);
    return 0;
}
```

实验 10

```
#include <stdio.h>//10-2
#include<math.h>
int is_sqr(int m){
    int s=sqrt((double)m);
    return s*s==m;
}
int same_dig(int m){
    int d[3],i,j;
    d[0]=m%10;
    d[1]=(m/10)%10;
    d[2]=m/100;
    for(i=0;i<3;i++)
        for(j=i+1;j<3;j++)
            if(d[i]==d[j])
                return 1;
    return 0;
}
int fun(int number){
    int i,c=0;
    for(i=101;i<=number;i++)
        if(is_sqr(i)&&same_dig(i))
            c++;
    return c;
```

```
}
int main(){
    int number,i,count;
    printf("Enter a number: ");
    scanf("%d",&number);
    count=fun(number);
    printf("count=%d\n",count);
    return 0;
}
#include <stdio.h>//10-3
#include<math.h>
int prime(int m){
    int k,sqrtm=sqrt((double)m);
    for(k=2;k<=sqrtm;k++)
        if(m%k==0)
            return 0;
    return 1;
}
int main(){
    int i,n,x,count=0;
    printf("Enter n:");
    scanf("%d",&n);
    printf("Enter %d numbers:",n);
    for(i=0;i<n;i++){
        scanf("%d",&x);
        if(prime(x))
            count++;
    }
    printf("count=%d\n",count);
    return 0;
}
#include <stdio.h>//10-4
double P(int n, double x){
    if(n==0)
        return 1.0;
    if(n==1)
        return x;
    return ((2*n-1)*P(n-1,x)-(n-1)*P(n-2,x))/n;
}
int main(){
    int n;
    double x;
    printf("Enter n:");
    scanf("%d",&n);
```

```
    printf("Enter x:");
    scanf("%lf",&x);
    printf("P(%d,%.2f)=%.2f\n",n,x,P(n,x));
    return 0;
}
#include <stdio.h>//10-5
int Ack(int m, int n){
    if(m==0)
        return n+1;
    if(n==0)
        return Ack(m-1,1);
    return Ack(m-1,Ack(m,n-1));
}
int main(){
    int m,n;
    printf("Enter m:");
    scanf("%d",&m);
    printf("Enter n:");
    scanf("%d",&n);
    printf("Ackerman(%d,%d)=%d\n",m,n,Ack(m,n));
    return 0;
}
#include <stdio.h>//10-6
void dectobin(int n){
    if(n<=1){
        printf("%d",n);
        return;
    }
    dectobin(n/2);
    printf("%d",n%2);
}
int main(){
    int n;
    printf("Enter n:");
    scanf("%d",&n);
    dectobin(n);
    printf("\n");
    return 0;
}
#include <stdio.h>//10-7
int f(int n){
    if(n==0)
        return 0;
    if(n==1)
```

```
        return 1;
    return f(n-1)+f(n-2);
}
int main(){
    int n;
    printf("Enter n:");
    scanf("%d",&n);
    printf("f(%d)=%d\n",n,f(n));
    return 0;
}
#include <stdio.h>//10-8
void inverse(int n){
    if(n<10){
        printf("%d",n);
        return;
    }
    printf("%d",n%10);
    inverse(n/10);
}
int main(){
    int number;
    printf("Enter a number:");
    scanf("%d",&number);
    inverse(number);
    return 0;
}
#include <stdio.h>//10-9
int main(){
    double fun(int n,double x);/*定义在调用之后，需声明*/
    int n;
    double x,root;
    printf("Enter x:");
    scanf("%lf",&x);
    printf("Enter n:");
    scanf("%d",&n);
    root=fun(n,x);
    printf("Root=%.2f\n",root);
    return 0;
}
double fun(int n,double x){
    if(n==1)/*指数为，应返回x*/
        return x;
    else
        return x*fun(n-1,x);
```

```
}
```

实验 11

```
#include<stdio.h>//11-1-2
int main(){
    char*
months[12]={"January","February","March","April","May","June","July","August","September","O
ctober","November","December"};
    int month;
    printf("Enter a month: ");
    scanf("%d",&month);
    printf("%s\n",months[month-1]);
    return 0;
}
#include<stdio.h>//11-1-3
#include<string.h>
int main(){
    char
*weekdays[7]={"Sunday","Monday","Tuesday","Wednesday","Thursday","Friday","Saturday"},s[80];
    int i;
    gets(s);
    for(i=0;i<7;i++)
        if(strcmp(weekdays[i],s)==0)
            break;
    if(i<7)
        printf("%d\n",i+1);
    else
        printf("-1\n");
    return 0;
}
#include<stdio.h>//11-1-4
#include<string.h>
#include<stdlib.h>
int max_len(char *s[],int n){
    int maxLen=0,i;
    for(i=0;i<n;i++){
        if(strlen(s[i])>maxLen)
            maxLen=strlen(s[i]);
    }
    return maxLen;
}
int main(){
```

```
    char* s[10];
    int n,i;
    printf("Enter n: ");
    scanf("%d",&n);
    for(i=0;i<n;i++){
        s[i]=(char*)malloc(80*sizeof(char));
        scanf("%s",s[i]);
    }
    printf("length=%d\n",max_len(s,n));
    return 0;
}
#include<stdio.h>//11-1-5
char * str_cat(char *s, char *t){
    char *p=s,*q=t;
    while(*p)
        p++;
    while(*q){
        *p=*q;
        p++;q++;
    }
    *p='\0';
    return s;
}
int main(){
    char s[80],t[80];
    gets(s);
    gets(t);
    puts(str_cat(s,t));
    return 0;
}
#include<stdio.h>//11-1-6
#include<stdlib.h>
#include<string.h>
char *sub_str(char *s, char a, char b){
    int n=strlen(s),i,j;
    char *t=(char*)malloc(n*sizeof(char));/*为t分配空间*/
    for(i=0;s[i]!=a;i++);/*找到a在s中的位置*/
    for(j=0;s[j]!=b;j++);/*找到b在s中的位置*/
    strcpy(t,&s[i]);/*将s中从s[i]开始的部分拷贝到t*/
    t[j-i+1]='\0';/*将t中从值为b的元素后面的部分从串中去掉*/
    return t;
}
int main(){
    char s[80],a,b;
```

```
    scanf("%s",s);
    getchar();
    scanf("%c",&a);
    getchar();
    scanf("%c",&b);
    printf("%s\n",sub_str(s,a,b));
    return 0;
}
#include<stdio.h>//11-1-7
char *change(char s[][20]){
    char t[10];
    int i;
    for(i=0;i<4;i++){
        t[2*i]=s[i][8];
        t[2*i+1]=s[i][9];
    }
    t[2*i]='\0';
    return t;
}
int main(){
    char s[4][20],*p;
    int i;
    for(i=0;i<4;i++)
        scanf("%s",s[i]);
    p=change(s);
    printf("%s\n",p);

    return 0;
}
#include<stdio.h>//11-1-8
float matrix(float a[][3],int n){
    int i,j;
    float sum=0.0;
    for(i=0;i<3;i++)
        for(j=0;j<3;j++){
            if(i==j)
                sum=sum+*(*(a+i)+j);
            if(j==2-i&&i!=j)
                sum=sum+*(*(a+i)+j);
        }
    return sum;
}
int main(){
    int i,j;
```

```
    float a[3][3];
    printf("输入×数组\n");
    for(i=0;i<3;i++)
        for(j=0;j<3;j++)
            scanf("%f",&a[i][j]);
    printf("sum=%.2f",matrix(a,3));
    return 0;
}
#include<stdlib.h>//11-2-1
#include<stdio.h>
#include<string.h>
struct stud_node{
    int num;
    char name[20];
    int score;
    struct stud_node* next;
};
int main(){
    struct stud_node *head, *tail, *p;
    int num,score;
    char name[20];
    int size=sizeof(struct stud_node);
    head=tail=NULL;
    printf("Input num,name,score:\n");
    scanf("%d",&num);
    while(num!=0){
        p=(struct stud_node*)malloc(size);
        scanf("%s%d",name,&score);
        p->num=num;
        strcpy(p->name,name);
        p->score=score;
        p->next=NULL;
        if(head==NULL)
            head=p;
        else
            tail->next=p;
        tail=p;
        scanf("%d",&num);
    }
    for(p=head;p!=NULL;p=p->next)
        printf("%d %s %d\n",p->num,p->name,p->score);
    return 0;
}
#include<stdlib.h>//11-2-2
```

```c
#include<stdio.h>
#include<string.h>
struct stud_node{
    int num;
    char name[20];
    int score;
    struct stud_node* next;
};
int main(){
    struct stud_node *head, *tail, *p;
    int num,score,v;
    char name[20];
    int size=sizeof(struct stud_node);
    head=tail=NULL;
    scanf("%d",&num);
    while(num!=0){
        p=(struct stud_node*)malloc(size);
        scanf("%s%d",name,&score);
        p->num=num;
        strcpy(p->name,name);
        p->score=score;
        p->next=NULL;
        if(head==NULL)
            head=p;
        else
            tail->next=p;
        tail=p;
        scanf("%d",&num);
    }
    scanf("%d",&v);
    for(p=head;p!=NULL;p=p->next){
        if(p->score>=v)
            printf("%d %s %d\n",p->num,p->name,p->score);
    }
    return 0;
}
#include<stdlib.h>//11-2-3
#include<stdio.h>
struct node{
    int data;
    struct node* next;
};
int main(){
    int size=sizeof(struct node),n;
```

```
    struct node *head=NULL,*p;
    scanf("%d",&n);
    while(n>=0){
        p=(struct node*)malloc(size);
        p->data=n;
        p->next=head;
        head=p;
        scanf("%d",&n);
    }
    for(p=head;p!=NULL;p=p->next)
        printf("%d ",p->data);
    printf("\n");
    return 0;
}
#include<stdlib.h>//11-2-4
#include<stdio.h>
struct node{
    int data;
    struct node* next;
};
int main(){
    int size=sizeof(struct node),n;
    struct node *head=NULL,*tail=NULL,*p,*q;
    scanf("%d",&n);
    while(n>=0){
        p=(struct node*)malloc(size);
        p->data=n;
        p->next=NULL;
        if(head==NULL)
            head=p;
        else
            tail->next=p;
        tail=p;
        scanf("%d",&n);
    }
    p=head;q=NULL;
    while(p!=NULL){/*扫描链表*/
        if(p->data%2==0){/*当前节点数据为偶数*/
            if(q==NULL){/*若欲删除的节点为链表首*/
                head=p->next;/*将p从链表中摘取*/
                free(p);/*释放节点p*/
                p=head;/*p指向下一个节点*/
            }else{
                q->next=p->next;/*将p从链表中摘取*/
```

```
                free(p);/*释放节点p*/
                p=q->next;/*p指向下一个节点*/
            }
        }else{
            q=p;/*q指向当前节点的前一个节点*/
            p=q->next;/*调整当前节点指针*/
        }
    }
    for(p=head;p!=NULL;p=p->next)
        printf("%d ",p->data);
    printf("\n");
    return 0;
}
#include<stdlib.h>//11-2-5
#include<stdio.h>
struct node{
    int data;
    struct node* next;
};
struct node* merge(struct node *l1,struct node *l2){/*将两个有序链表合并成一个有序链表*/
    struct node *head=NULL,*tail=NULL,*p=l1,*q=l2;/*p,q分别指向两个链表的表首*/
    while(l1!=NULL&&l2!=NULL)
        if(l1->data<l2->data){/*l1的表首小于l2的表首，将p从l1中摘下并添加到新表中*/
            if(head==NULL)/*若新表为空*/
                head=p;
            else
                tail->next=p;
            tail=p;
            l1=p->next;/*调整l1的新表首*/
            p=l1;/*p跟踪l1的表首*/
        }else{/*l2的表首不大于l1的表首，将q从l2中摘下并添加到新表中*/
            if(head==NULL)/*若新表为空*//*若新表为空*/
                head=q;
            else
                tail->next=q;
            tail=q;
            l2=q->next;/*调整l2的新表首*/
            q=l2;/*q跟踪l2的表首*/
        }
    if(l1!=NULL)/*若l1还有元素*/
        tail->next=l1;
    if(l2!=NULL)/*若l2还有元素*/
        tail->next=l2;
    return head;
```

```
}
int main(){
    int size=sizeof(struct node),n;
    struct node *head1=NULL,*head2=NULL,*tail=NULL,*p,*head;
    scanf("%d",&n);
    while(n>=0){/*创建第一个有序链表*/
        p=(struct node*)malloc(size);
        p->data=n;
        p->next=NULL;
        if(head1==NULL)
            head1=p;
        else
            tail->next=p;
        tail=p;
        scanf("%d",&n);
    }
    tail=NULL;
    scanf("%d",&n);
    while(n>=0){/*创建第二个有序链表*/
        p=(struct node*)malloc(size);
        p->data=n;
        p->next=NULL;
        if(head2==NULL)
            head2=p;
        else
            tail->next=p;
        tail=p;
        scanf("%d",&n);
    }
    head=merge(head1,head2);/*将两个有序链表合并成一个有序链表*/
    for(p=head;p!=NULL;p=p->next)/*输出*/
        printf("%d ",p->data);
    printf("\n");
    return 0;
}
#include<stdlib.h>//11-2-6
#include<stdio.h>
struct node{
    int data;
    struct node* next;
};
int main(){
    int size=sizeof(struct node),n;
    struct node *head=NULL,*tail=NULL,*NEW=NULL,*p,*q;
```

```
    scanf("%d",&n);
    while(n>=0){
        p=(struct node*)malloc(size);
        p->data=n;
        p->next=NULL;
        if(head==NULL)
            head=p;
        else
            tail->next=p;
        tail=p;
        scanf("%d",&n);
    }
    p=head;q=NULL,tail=NULL;
    while(p!=NULL){/*扫描链表*/
        if(p->data%2==0){/*当前节点数据为偶数*/
            if(q==NULL){/*若欲删除的节点为链表首*/
                head=p->next;/*将p从链表中摘取*/
                if(NEW==NULL)/*加入新表中的元素是第一个*/
                    NEW=p;
                else
                    tail->next=p;
                tail=p;
                p=head;/*p指向下一个节点*/
            }else{
                q->next=p->next;/*将p从链表中摘取*/
                if(NEW==NULL)
                    NEW=p;
                else
                    tail->next=p;
                tail=p;
                p=q->next;/*p指向下一个节点*/
            }
        }else{
            q=p;/*q指向当前节点的前一个节点*/
            p=q->next;/*调整当前节点指针*/
        }
    }
    tail->next=NULL;
    for(p=NEW;p!=NULL;p=p->next)
        printf("%d ",p->data);
    printf("\n");
    return 0;
}
```

实验 12

```
#include<stdio.h>//12-1
#include<stdlib.h>
int main(){
 char ch;
 FILE* fp;
 if((fp=fopen("a.txt","w"))==NULL){
  printf("Can' t open file!");
  exit(0);
 }
 while((ch=getchar())!=' \n' )
  fputc(ch,fp);
 fclose(fp);
 return 0;
}
#include<stdio.h>//12-2
#include<stdlib.h>
int main(){
 char ch;
 int alphbet=0,digit=0,other=0;
 FILE* fp;
 if((fp=fopen("a.txt","r"))==NULL){
  printf("Can' t open file!");
  exit(0);
 }
 for(ch=getchar();!feof(fp);ch=getchar())
  if(ch>=' A' &&ch<=' Z' ||ch>=' a' &&ch<=' z' )
   alphbet++;
  else if(ch>=' ' &&ch<=' ' )
   digit++;
  else
   other++;
  printf("letters: %d, digits: %d, others: %d\n",alphbet,digit,other);
 fclose(fp);
 return 0;
}
#include<stdio.h>//12-3
#include<stdlib.h>
int main(){
 double x;
 FILE *fp;
 if((fp=fopen("b.txt","w"))==NULL){
  printf("Can' t open file!");
```

```
  exit(0);
 }
 scanf("%lf",&x);
 while(x!=-1.0){
  fprintf(fp,"%f",x);
  scanf("%lf",&x);
 }
 fclose(fp);
 return 0;
}
#include<stdio.h>//12-4解
#include<stdlib.h>
typedef struct{
 char number[8];
 char name[10];
 int math;
 int chiness;
 int english;
 int total;
 float ave;
}student;
int main(void){
 student stu;
 int i;
 FILE *fp;
 if((fp=fopen("f3.txt","w"))==NULL){/*打开文件写*/
  printf("Canot open this file\n");
  exit(0);
 }
 for(i=0;i<10;i++){/*输入个学生的数据*/
  printf("请输入学号: ");
  scanf("%s",stu.number);
  printf("请输入姓名: ");
  scanf("%s",stu.name);
  printf("请输入数学成绩: ");
  scanf("%d",&stu.math);
  printf("请输入语文成绩: ");
  scanf("%d",&stu.chianess);
  printf("请输入英语成绩: ");
  scanf("%d",&stu.english);
  fprintf(fp,"%s %s %d %d %d\n",stu.number,stu.name,stu.math,stu.chianess,stu.english);
 }
 fclose(fp);
 if((fp=fopen("f3.txt","r"))==NULL){/*打开文件读*/
```

```
  printf("Canot open this file\n");
  exit(0);
 }
 for(i=0;i<10;i++){/*读个学生的数据并计算总分和平均分*/
  fscanf(fp,"%s %s %d %d %d\n",stu.number,stu.name,&stu.math,&stu.chianess,&stu.english);
  stu.total=stu.math+stu.chianess+stu.english;
  stu.ave=(float)stu.total/3;
  printf("%s %s %4d %4d %4d %4d
%5.1f\n",stu.number,stu.name,stu.math,stu.chianess,stu.english,stu.total,stu.ave);
 }
 fclose(fp);
 return EXIT_SUCCESS;
}
int main(void){//12-4解
 student stu;
 int i,size=;
 FILE *fp;
 if((fp=fopen("f3.dat","wb"))==NULL){/*打开文件写*/
  printf("Canot open this file\n");
  exit(0);
 }
 for(i=0;i<10;i++){/*输入个学生的数据*/
  printf("请输入学号: ");
  scanf("%s",stu.number);
  printf("请输入姓名: ");
  scanf("%s",stu.name);
  printf("请输入数学成绩: ");
  scanf("%d",&stu.math);
  printf("请输入语文成绩: ");
  scanf("%d",&stu.chianess);
  printf("请输入英语成绩: ");
  scanf("%d",&stu.english);
  stu.total=stu.math+stu.chianess+stu.english;
  stu.ave=(float)stu.total/3;
  fwrite(&stu,sizeof(student),1,fp);
 }
 fclose(fp);
 if((fp=fopen("f3.dat","rb"))==NULL){/*打开文件读*/
  printf("Canot open this file\n");
  exit(0);
 }
 for(i=0;i<10;i++){/*读个学生的数据并计算总分和平均分*/
  fread(&stu,sizeof(student),1,fp);
  printf("%s %s %4d %4d %4d %4d
```

```
%5.1f\n",stu.number,stu.name,stu.math,stu.chianess,stu.english,stu.total,stu.ave);
 }
 fclose(fp);
 return EXIT_SUCCESS;
}
#include<stdlib.h>//12-5
#include<stdio.h>
int main(void){
 FILE *fp1, *fp2;
 char ch1,ch2;
 int row=0,col=0;
 if((fp1=fopen("file1.txt","r"))==NULL){/*打开文件读*/
  printf("Canot open this file\n");
  exit(0);
 }
 if((fp2=fopen("file2.txt","r"))==NULL){/*打开文件读*/
  printf("Canot open this file\n");
  exit(0);
 }
 ch1=fgetc(fp1);
 ch2=fgetc(fp2);
 while(!feof(fp1)&&!feof(fp2)&&(ch1==ch2)){/*文件未结束且两个文件的内容相同*/
  if(ch1==' \n'){/*一行结束*/
   row++;
   col=0;
  }else
   col++;
  ch1=fgetc(fp1);
  ch2=fgetc(fp2);
 }
 if(!feof(fp1)||!feof(fp2))
  printf("%d %d\n",row+1,col+1);
 else
  printf("The files are same.\n");
 return (EXIT_SUCCESS);
}
#include<stdlib.h>//12-6
#include<stdio.h>
int main(void){
 FILE *fp;
 char ch,file_name[80];
 int rows=0;
 scanf("%s",file_name);/*输入文件名*/
 if((fp=fopen(file_name,"r"))==NULL){/*打开文件读*/
```

```
 printf("Canot open this file\n");
 exit(0);
}
while((ch=fgetc(fp))!=EOF){/*只要文件未结束*/
 if(ch==' \n' )/*一行结束*/
  rows++;
 if(ch>=' A' &&ch<=' Z' )/*遇到大写字母*/
  ch=' a' +ch-' A' ;
 putchar(ch);
}
printf("This file have %d rows.\n", rows+1);/*输出行数*/
return (EXIT_SUCCESS);
}
#include<stdlib.h>//12-7
#include<stdio.h>
int main(){
 FILE *fp;/*必须是文件类型指针*/
 int n,sum=0;/*和数需初始化为*/
 if((fp=fopen("int_data.dat","r+"))==NULL){/*文件打开方式必须是读写*/
  printf("Can' t open file!\n");
  exit(0);
 }
 while(fscanf(fp,"%d",&n)!=EOF)/*循环条件应该是文件未读完*/
  sum=sum+n;
 fprintf(fp,"%d",sum);
 fclose(fp);
 return 0;
}
```