# 第 7 章　上机题

7-3.

```
int psushu(int m)
{int i;
  for(i=2;i<m;i++)
     if(m%i==0) break;
  if(i ==m) return 1;
  return 0;
}
void main()
{int a,s;
printf("enter sushu is \n");
scanf("%d",&a);
s=psushu(a);
if(s==1) printf("a is sushu\n");
else printf("s is not sushu\n");
}
```

方法二、

```
int psushu(int m)
{int i;
for (i = 2; i<m; i++)
      if (m%i == 0) return 0;
return 1;
}
```

7.4

```
#define N 3
void fc(int a[][N])
{int i,j,temp;
  for(i=0;i<N;i++)
     for(j=i+1;j<N;j++)
     {temp=a[i][j];a[i][j]=a[j][i];a[j][i]=temp;}
}
void main()
{int i,j,a[N][N];
  for(i=0;i<N;i++)
     for(j=0;j<N;j++)
        scanf("%d",&a[i][j]);
   fc(a);
   for(i=0;i<N;i++)
      {for(j=0;j<N;j++)
           printf("%d ",a[i][j]);
```

```
        printf("\n");
      }
}
```

7-5

```
#include <stdio.h>
#include <string.h>
void inverse(char str[])
{ char t;
   int i,j;
   for (i=0,j=strlen(str)-1;i<(strlen(str)/2);i++,j--)
     {t=str[i];
      str[i]=str[j];
      str[j]=t;
     }
}
int main()
{
 char str[100];
 printf("input string:");
 scanf("%s",str);
 inverse(str);
 printf("inverse string:%s\n",str);
 return 0;
}
```

7-11

方法 1：（选择法）

```
#define N 10
void paixu(char x[])
{int i,j;
 char t;
 for(i=0; i<N-1; i++)
    for(j=i+1; j<N;   j++)
       if(x[i]>x[j]) {t=x[i];x[i]=x[j];x[j]=t;}
}

int main()
{char y[N];int i;
 for(i=0;i<N;i++)
 scanf("%c",&y[i]);
 paixu(y);
 for(i=0;i<N;i++)
    printf("%5c",y[i]);
```

```
  printf("\n");
  return 0;
}
```

方法 2：冒泡法

```
#include <stdio.h>
#include <string.h>
#define N 10
char str[N];
int main()
{void sort(char []);
  int i,flag;
  for (flag=1;flag==1;)
    {printf("input string:\n");
      scanf("%s",&str);
      if (strlen(str)>N)
          printf("string too long,input again!");
      else
          flag=0;
    }
  sort(str);
  printf("string sorted:\n");
  for (i=0;i<N;i++)
    printf("%c",str[i]);
  printf("\n");
  return 0;
}

void sort(char str[])
{int i,j;
  char t;
  for(j=1;j<N;j++)
      for (i=0;(i<N-j)&&(str[i]!='\0');i++)
          if(str[i]>str[i+1])
              {t=str[i];
                str[i]=str[i+1];
                str[i+1]=t;
              }
}
```

7-13.

```
float p(float x0,int n)
{float y;
  if(n==0||n==1) {if(n==1) y=x0;else y=1; }
```

```
 else y=((2*n-1)*x0-p(x0,n-1)-(n-1)*p(x0,n-2))/n;
 return(y);
}
main()
{float x,y0;int a;
 scanf("%f,%d",&x,&a);
 y0=p(x,a);
 printf("y0=%.3f\n",y0);
}
```

7-14

```
#include <stdio.h>
#define N 10
#define M 5
float score[N][M];
float a_stu[N],a_cour[M];
int r,c;

int main()
{ int i,j;
   float h;
   float s_var(void);
   float highest();
   void input_stu(void);
   void aver_stu(void);
   void aver_cour(void);
   input_stu();
   aver_stu();
   aver_cour();
   printf("\n  NO.      cour1    cour2    cour3    cour4    cour5    aver\n");
   for(i=0;i<N;i++)
     {printf("\n NO %2d ",i+1);
      for(j=0;j<M;j++)
         printf("%8.2f",score[i][j]);
      printf("%8.2f\n",a_stu[i]);
     }
   printf("\naverage:");
   for (j=0;j<M;j++)
      printf("%8.2f",a_cour[j]);
   printf("\n");
   h=highest();
   printf("highest:%7.2f    NO. %2d    course %2d\n",h,r,c);
   printf("variance %8.2f\n",s_var());
   return 0;
```

```
}

void input_stu(void)
  {int i,j;
    for (i=0;i<N;i++)
      {printf("\ninput score of student%2d:\n",i+1);
        for (j=0;j<M;j++)
            scanf("%f",&score[i][j]);
      }
  }

void aver_stu(void)
{int i,j;
    float s;
    for (i=0;i<N;i++)
      {for (j=0,s=0;j<M;j++)
            s+=score[i][j];
        a_stu[i]=s/(float)M;
      }
}

void aver_cour(void)
  {int i,j;
    float s;
    for (j=0;j<M;j++)
        {s=0;
          for (i=0;i<N;i++)
              s+=score[i][j];
          a_cour[j]=s/(float)N;
        }
  }

float highest()
  {float high;
    int i,j;
    high=score[0][0];
    for (i=0;i<N;i++)
        for (j=0;j<M;j++)
            if (score[i][j]>high)
        {high=score[i][j];
          r=i+1;
          c=j+1;
        }
    return(high);
```

```
 }

float s_var(void)
 {int i;
  float sumx,sumxn;
  sumx=0.0;
  sumxn=0.0;
  for (i=0;i<N;i++)
     {sumx+=a_stu[i]*a_stu[i];
      sumxn+=a_stu[i];
     }
  return(sumx/N-(sumxn/N)*(sumxn/N));
 }
```

7-15

```
#include "stdio.h"
#include "string.h"
#define N 10
void input(int no[], char name[][20])
{
   int i;
   for (i = 0; i < N; i++)
      scanf("%d%s",&no[i],name[i]);
}
void sort(int no[], char name[][20])
{
   int i,j,tmp;
   char ctm[20];
   for(i=0;i<N-1;i++)
      for (j = i + 1; j < N; j++)
         if(no[i]>no[j])
         {
            tmp = no[i];no[i] = no[j];no[j] = tmp;
            strcpy(ctm, name[i]); strcpy(name[i], name[j]); strcpy(name[j], ctm);
         }
}
int search(int a[],int x)
{
   int top = 0, bot = N - 1,m,i,f=0;
   while(top<=bot)
   {
      m = (top + bot) / 2;
      if (x == a[m])
```

```
        {
            f = 1;
            return m;
        }
        else if (x < a[m])
            bot = m - 1;
        else
            top = m + 1;
        }
        if (f == 0)
            return -1;
}
int main()
{
    int    i, j, x, idx = -1, no[N];// = { 20,12,11,13,14,15,16,17,19,18 };
    char name[N][20];// = { "Li","Zhang","Wang","Zhao","Qian","Sun","Zhou","Wu","Zheng","Chen"};
    input(no, name);
    sort(no, name);
    for (i = 0; i < N;i++)
        printf("%d %s\n", no[i], name[i]);
    scanf("%d", &x);
    idx = search(no, x);
    if (idx != -1)
        printf("name:%s", name[idx]);
    else
        printf("无该职工号");
      return 0;
}
```