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1-5 #include <stdio.h>

int main ( )

{ printf ("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\n\n");

printf(" Very Good!\n\n");

printf ("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\n");

return 0;

}

1-6#include <stdio.h>

int main()

{int a,b,c,max;

printf("please input a,b,c:\n");

scanf("%d,%d,%d",&a,&b,&c);

max=a;

if (max<b)

max=b;

if (max<c)

max=c;

printf("The largest number is %d\n",max);

return 0;

}

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3-1 #include <stdio.h>

#include <math.h>

int main()

{float p,r,n;

r=0.1;

n=10;

p=pow(1+r,n);

printf("p=%f\n",p);

return 0;

}

3-2-1

#include <stdio.h>

#include <math.h>

int main()

{float r5,r3,r2,r1,r0,p,p1,p2,p3,p4,p5;

p=1000;

r5=0.0585;

r3=0.054;

r2=0.0468;

r1=0.0414;

r0=0.0072;

p1=p\*((1+r5)\*5); // 一次存5年期

p2=p\*(1+2\*r2)\*(1+3\*r3); // 先存2年期，到期后将本息再存3年期

p3=p\*(1+3\*r3)\*(1+2\*r2); // 先存3年期，到期后将本息再存2年期

p4=p\*pow(1+r1,5); // 存1年期，到期后将本息存再存1年期，连续存5次

p5=p\*pow(1+r0/4,4\*5); // 存活期存款。活期利息每一季度结算一次

printf("p1=%f\n",p1); // 输出按第1方案得到的本息和

printf("p2=%f\n",p2); // 输出按第2方案得到的本息和

printf("p3=%f\n",p3); // 输出按第3方案得到的本息和

printf("p4=%f\n",p4); // 输出按第4方案得到的本息和

printf("p5=%f\n",p5); // 输出按第5方案得到的本息和

return 0;

}

3-2-2

#include <stdio.h>

#include <math.h>

int main()

{double r5,r3,r2,r1,r0,p,p1,p2,p3,p4,p5;

p=1000;

r5=0.0585;

r3=0.054;

r2=0.0468;

r1=0.0414;

r0=0.0072;

p1=p\*((1+r5)\*5); // 一次存5年期

p2=p\*(1+2\*r2)\*(1+3\*r3); // 先存2年期，到期后将本息再存3年期

p3=p\*(1+3\*r3)\*(1+2\*r2); // 先存3年期，到期后将本息再存2年期

p4=p\*pow(1+r1,5); // 存1年期，到期后将本息存再存1年期，连续存5次

p5=p\*pow(1+r0/4,4\*5); // 存活期存款。活期利息每一季度结算一次

printf("p1=%f\n",p1); // 输出按第1方案得到的本息和

printf("p2=%f\n",p2); // 输出按第2方案得到的本息和

printf("p3=%f\n",p3); // 输出按第3方案得到的本息和

printf("p4=%f\n",p4); // 输出按第4方案得到的本息和

printf("p5=%f\n",p5); // 输出按第5方案得到的本息和

return 0;

}

3-2-3

#include <stdio.h>

#include <math.h>

int main()

{float r5,r3,r2,r1,r0,p,p1,p2,p3,p4,p5;

p=1000;

r5=0.0585;

r3=0.054;

r2=0.0468;

r1=0.0414;

r0=0.0072;

p1=p\*((1+r5)\*5); // 一次存5年期

p2=p\*(1+2\*r2)\*(1+3\*r3); // 先存2年期，到期后将本息再存3年期

p3=p\*(1+3\*r3)\*(1+2\*r2); // 先存3年期，到期后将本息再存2年期

p4=p\*pow(1+r1,5); // 存1年期，到期后将本息存再存1年期，连续存5次

p5=p\*pow(1+r0/4,4\*5); // 存活期存款。活期利息每一季度结算一次

printf("p1=%10.2f\n",p1); // 输出按第1方案得到的本息和

printf("p2=%10.2f\n",p2); // 输出按第2方案得到的本息和

printf("p3=%10.2f\n",p3); // 输出按第3方案得到的本息和

printf("p4=%10.2f\n",p4); // 输出按第4方案得到的本息和

printf("p5=%10.2f\n",p5); // 输出按第5方案得到的本息和

return 0;

}

3-3.

#include <stdio.h>

#include <math.h>

int main()

{float d=300000,p=6000,r=0.01,m;

m=log10(p/(p-d\*r))/log10(1+r);

printf("m=%6.2f\n",m);

return 0;

}

3-4

#include <stdio.h>

int main()

{int c1,c2;

c1=197;

c2=198;

printf("c1=%c,c2=%c\n",c1,c2);

printf("c1=%d，c2=%d\n",c1,c2);

return 0;

}

3-5

#include <stdio.h>

int main()

{int a,b;

float x,y;

char c1,c2;

scanf("a=%d b=%d",&a,&b);

scanf("%f %e",&x,&y);

scanf("%c%c",&c1,&c2);

printf("a=%d,b=%d,x=%f,y=%f,c1=%c,c2=%c\n",a,b,x,y,c1,c2);

return 0;

}

3-6

#include <stdio.h>

int main()

{char c1='C',c2='h',c3='i',c4='n',c5='a';

c1=c1+4;

c2=c2+4;

c3=c3+4;

c4=c4+4;

c5=c5+4;

printf("passwor is %c%c%c%c%c\n",c1,c2,c3,c4,c5);

return 0;

}

3-7

#include <stdio.h>

int main ()

{float h,r,l,s,sq,vq,vz;

float pi=3.141526;

printf("请输入圆半径r，圆柱高h∶");

scanf("%f,%f",&r,&h); //要求输入圆半径r和圆柱高h

l=2\*pi\*r; //计算圆周长l

s=r\*r\*pi; //计算圆面积s

sq=4\*pi\*r\*r; //计算圆球表面积sq

vq=3.0/4.0\*pi\*r\*r\*r; //计算圆球体积vq

vz=pi\*r\*r\*h; //计算圆柱体积vz

printf("圆周长为: l=%6.2f\n",l);

printf("圆面积为: s=%6.2f\n",s);

printf("圆球表面积为: sq=%6.2f\n",sq);

printf("圆球体积为: v=%6.2f\n",vq);

printf("圆柱体积为: vz=%6.2f\n",vz);

return 0;

}

3-8-1

#include <stdio.h>

int main()

{

int c1,c2; //整型定义

printf("请输入两个整数c1,c2:");

scanf("%d,%d",&c1,&c2);

printf("按字符输出结果:\n");

printf("%c,%c\n",c1,c2);

printf("按ASCII码输出结果为:\n");

printf("%d,%d\n",c1,c2);

return 0;

}

3-8-2

#include <stdio.h>

int main()

{

char c1,c2; //定义字符型变量

int i1,i2; //定义整型变量

printf("请输入两个字符c1,c2:");

scanf("%c,%c",&c1,&c2);

i1=c1; //赋值给整型变量

i2=c2;

printf("按字符输出结果:\n");

printf("%c,%c\n",i1,i2);

printf("按整数输出结果:\n");

printf("%d,%d\n",c1,c2);

return 0;

}

3-8-3

#include <stdio.h>

int main()

{

char c1,c2; //定义为字符型

int i1,i2; //定义为整型

printf("请输入两个整数i1,i2:");

scanf("%d,%d",&i1,&i2);

c1=i1; //将整数赋值给字符变量

c2=i2;

printf("按字符输出结果:\n");

printf("%c,%c\n",c1,c2);

printf("按整数输出结果:\n");

printf("%d,%d\n",c1,c2);

return 0;

}

3-8

#include <stdio.h>

int main()

{

char c1,c2;

printf("请输入两个字符c1,c2:");

c1=getchar();

c2=getchar();

printf("用putchar语句输出结果为:");

putchar(c1);

putchar(c2);

printf("\n");

printf("用printf语句输出结果为:");

printf("%c %c\n",c1,c2);

return 0;

}

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4-4-1

#include <stdio.h>

int main()

{

int a,b,c;

printf("请输入三个整数:");

scanf("%d,%d,%d",&a,&b,&c);

if (a<b)

if (b<c)

printf("max=%d\n",c);

else

printf("max=%d\n",b);

else if (a<c)

printf("max=%d\n",c);

else

printf("max=%d\n",a);

return 0;

}

4-4-2

#include <stdio.h>

int main()

{ int a,b,c,temp,max;

printf("请输入三个整数:");

scanf("%d,%d,%d",&a,&b,&c);

temp=(a>b)?a:b; /\*将a和b中的大者存入temp中\*/

max=(temp>c)?temp:c; /\*将a和b中的大者与c比较,取最大者\*/

printf("三个整数的最大数是%d\n",max);

return 0;

}

4-5-2

#include <stdio.h>

#include <math.h>

#define M 1000

int main()

{

int i,k;

printf("请输入一个小于%d的整数i:",M);

scanf("%d",&i);

while (i>M)

{printf("输入的数不符合要求，请重新输入一个小于%d的整数i:",M);

scanf("%d",&i);

}

k=sqrt(i);

printf("%d的平方根的整数部分是：%d\n",i,k);

return 0;

}

4-5

#include <stdio.h>

#include <math.h>

#define M 1000

int main()

{

int i,k;

printf("请输入一个小于%d的整数i:",M);

scanf("%d",&i);

if (i>M)

{printf("输入的数不符合要求，请重新输入一个小于%d的整数i:",M);

scanf("%d",&i);

}

k=sqrt(i);

printf("%d的平方根的整数部分是：%d\n",i,k);

return 0;

}

4-6.

#include <stdio.h>

int main()

{ int x,y;

printf("输入x:");

scanf("%d",&x);

if(x<1) /\* x<1 \*/

{ y=x;

printf("x=%3d, y=x=%d\n" ,x,y);

}

else if(x<10) /\* 1=<x<10 \*/

{ y=2\*x-1;

printf("x=%d, y=2\*x-1=%d\n",x,y);

}

else /\* x>=10 \*/

{ y=3\*x-11;

printf("x=%d, y=3\*x-11=%d\n",x,y);

}

return 0;

}

4-7-1

#include <stdio.h>

int main()

{

int x,y;

printf("enter x:");

scanf("%d",&x);

y=-1;

if(x!=0)

if(x>0)

y=1;

else

y=0;

printf("x=%d,y=%d\n",x,y);

return 0;

}

4-7-2

#include <stdio.h>

int main()

{

int x,y;

printf("please enter x:");

scanf("%d",&x);

y=0;

if(x>=0)

if(x>0) y=1;

else y=-1;

printf("x=%d,y=%d\n",x,y);

return 0;

}

4-8

#include <stdio.h>

int main()

{ float score;

char grade;

printf("请输入学生成绩:");

scanf("%f",&score);

while (score>100||score<0)

{printf("\n 输入有误,请重输");

scanf("%f",&score);

}

switch((int)(score/10))

{case 10:

case 9: grade='A';break;

case 8: grade='B';break;

case 7: grade='C';break;

case 6: grade='D';break;

case 5:

case 4:

case 3:

case 2:

case 1:

case 0: grade='E';

}

printf("成绩是 %5.1f,相应的等级是%c\n ",score,grade);

return 0;

}

4-9

#include <stdio.h>

#include <math.h>

int main()

{

int num,indiv,ten,hundred,thousand,ten\_thousand,place; //分别代表个位,十位,百位,千位,万位和位数

printf("请输入一个整数(0-99999):");

scanf("%d",&num);

if (num>9999)

place=5;

else if (num>999)

place=4;

else if (num>99)

place=3;

else if (num>9)

place=2;

else place=1;

printf("位数:%d\n",place);

printf("每位数字为:");

ten\_thousand=num/10000;

thousand=(int)(num-ten\_thousand\*10000)/1000;

hundred=(int)(num-ten\_thousand\*10000-thousand\*1000)/100;

ten=(int)(num-ten\_thousand\*10000-thousand\*1000-hundred\*100)/10;

indiv=(int)(num-ten\_thousand\*10000-thousand\*1000-hundred\*100-ten\*10);

switch(place)

{case 5:printf("%d,%d,%d,%d,%d",ten\_thousand,thousand,hundred,ten,indiv);

printf("\n反序数字为:");

printf("%d%d%d%d%d\n",indiv,ten,hundred,thousand,ten\_thousand);

break;

case 4:printf("%d,%d,%d,%d",thousand,hundred,ten,indiv);

printf("\n反序数字为:");

printf("%d%d%d%d\n",indiv,ten,hundred,thousand);

break;

case 3:printf("%d,%d,%d",hundred,ten,indiv);

printf("\n反序数字为:");

printf("%d%d%d\n",indiv,ten,hundred);

break;

case 2:printf("%d,%d",ten,indiv);

printf("\n反序数字为:");

printf("%d%d\n",indiv,ten);

break;

case 1:printf("%d",indiv);

printf("\n反序数字为:");

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

break;

}

return 0;

}

4-10-1

#include <stdio.h>

int main()

{

int i;

double bonus,bon1,bon2,bon4,bon6,bon10;

bon1=100000\*0.1;

bon2=bon1+100000\*0.075;

bon4=bon2+100000\*0.05;

bon6=bon4+100000\*0.03;

bon10=bon6+400000\*0.015;

printf("请输入利润i:");

scanf("%d",&i);

if (i<=100000)

bonus=i\*0.1;

else if (i<=200000)

bonus=bon1+(i-100000)\*0.075;

else if (i<=400000)

bonus=bon2+(i-200000)\*0.05;

else if (i<=600000)

bonus=bon4+(i-400000)\*0.03;

else if (i<=1000000)

bonus=bon6+(i-600000)\*0.015;

else

bonus=bon10+(i-1000000)\*0.01;

printf("奖金是: %10.2f\n",bonus);

return 0;

}

4-10-2

#include <stdio.h>

int main()

{

int i;

double bonus,bon1,bon2,bon4,bon6,bon10;

int branch;

bon1=100000\*0.1;

bon2=bon1+100000\*0.075;

bon4=bon2+200000\*0.05;

bon6=bon4+200000\*0.03;

bon10=bon6+400000\*0.015;

printf("请输入利润i:");

scanf("%d",&i);

branch=i/100000;

if (branch>10) branch=10;

switch(branch)

{ case 0:bonus=i\*0.1;break;

case 1:bonus=bon1+(i-100000)\*0.075;break;

case 2:

case 3: bonus=bon2+(i-200000)\*0.05;break;

case 4:

case 5: bonus=bon4+(i-400000)\*0.03;break;

case 6:

case 7:

case 8:

case 9: bonus=bon6+(i-600000)\*0.015;break;

case 10: bonus=bon10+(i-1000000)\*0.01;

}

printf("奖金是 %10.2f\n",bonus);

return 0;

}

4-11

#include <stdio.h>

int main()

{int t,a,b,c,d;

printf("请输入四个数:");

scanf("%d,%d,%d,%d",&a,&b,&c,&d);

printf("a=%d,b=%d,c=%d,d=%d\n",a,b,c,d);

if (a>b)

{ t=a;a=b;b=t;}

if (a>c)

{ t=a;a=c;c=t;}

if (a>d)

{ t=a;a=d;d=t;}

if (b>c)

{ t=b;b=c;c=t;}

if (b>d)

{ t=b;b=d;d=t;}

if (c>d)

{ t=c;c=d;d=t;}

printf("排序结果如下: \n");

printf("%d %d %d %d \n" ,a,b,c,d);

return 0;

}

4-12

#include <stdio.h>

int main()

{

int h=10;

float x1=2,y1=2,x2=-2,y2=2,x3=-2,y3=-2,x4=2,y4=-2,x,y,d1,d2,d3,d4;

printf("请输入一个点(x,y):");

scanf("%f,%f",&x,&y);

d1=(x-x4)\*(x-x4)+(y-y4)\*(y-y4); /\*求该点到各中心点距离\*/

d2=(x-x1)\*(x-x1)+(y-y1)\*(y-y1);

d3=(x-x2)\*(x-x2)+(y-y2)\*(y-y2);

d4=(x-x3)\*(x-x3)+(y-y3)\*(y-y3);

if (d1>1 && d2>1 && d3>1 && d4>1) h=0; /\*判断该点是否在塔外\*/

printf("该点高度为 %d\n",h);

return 0;

}

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5-2

#include <stdio.h>

#include <math.h> // 程序中用到数学函数fabs，应包含头文件math.n

int main()

{

int sign=1,count=0; // sign用来表示数值的符号,count用来统计循环次数

double pi=0.0,n=1.0,term=1.0; // pi开始代表多项式的值，最后代表π的值, n代表分母，term代表当前项的值

while(fabs(term)>=1e-8) // 检查当前项term的绝对值是否大于或等于10的(-6)次方

{

pi=pi+term; // 把当前项term累加到pi中

n=n+2; // n+2是下一项的分母

sign=-sign; // sign代表符号，下一项的符号与上一项符号相反

term=sign/n; // 求出下一项的值term

count++; // count累加1

}

pi=pi\*4; // 多项式的和pi乘以4，才是π的近似值

printf("pi=%10.8f\n",pi); // 输出π的近似值

printf("count=%d\n",count); // 输出循环次数

return 0;

}

5-3

#include <stdio.h>

int main()

{

int p,r,n,m,temp;

printf("请输入两个正整数n,m:");

scanf("%d,%d,",&n,&m);

if (n<m)

{

temp=n;

n=m;

m=temp;

}

p=n\*m;

while(m!=0)

{

r=n%m;

n=m;

m=r;

}

printf("它们的最大公约数为:%d\n",n);

printf("它们的最小公约数为:%d\n",p/n);

return 0;

}

5-4

#include <stdio.h>

int main()

{

char c;

int letters=0,space=0,digit=0,other=0;

printf("请输入一行字符:\n");

while((c=getchar())!='\n')

{

if (c>='a' && c<='z' || c>='A' && c<='Z')

letters++;

else if (c==' ')

space++;

else if (c>='0' && c<='9')

digit++;

else

other++;

}

printf("字母数:%d\n空格数:%d\n数字数:%d\n其它字符数:%d\n",letters,space,digit,other);

return 0;

}

5-5

#include <stdio.h>

int main()

{

int a,n,i=1,sn=0,tn=0;

printf("a,n=:");

scanf("%d%d",&a,&n);

while (i<=n)

{

tn=tn+a; /\*赋值后的tn为i个 a组成数的值\*/

sn=sn+tn; /\*赋值后的sn为多项式前i项之和\*/

a=a\*10;

++i;

}

printf("a+aa+aaa+...=%d\n",sn);

return 0;

}

5-6

#include <stdio.h>

int main()

{double s=0,t=1;

int n;

for (n=1;n<=20;n++)

{

t=t\*n;

s=s+t;

}

printf("1!+2!+...+20!=%22.15e\n",s);

return 0;

}

5-7

#include <stdio.h>

int main()

{

int n1=100,n2=50,n3=10;

double k,s1=0,s2=0,s3=0;

for (k=1;k<=n1;k++) /\*计算1到100的和\*/

{s1=s1+k;}

for (k=1;k<=n2;k++) /\*计算1到50各数的平方和\*/

{s2=s2+k\*k;}

for (k=1;k<=n3;k++) /\*计算1到10的各倒数和\*/

{s3=s3+1/k;}

printf("sum=%15.6f\n",s1+s2+s3);

return 0;

}

5-8

#include <stdio.h>

int main()

{

int i,j,k,n;

printf("parcissus numbers are ");

for (n=100;n<1000;n++)

{

i=n/100;

j=n/10-i\*10;

k=n%10;

if (n==i\*i\*i + j\*j\*j + k\*k\*k)

printf("%d ",n);

}

printf("\n");

return 0;

}

5-9-1

#define M 1000 /\*定义寻找范围\*/

#include <stdio.h>

int main()

{

int k1,k2,k3,k4,k5,k6,k7,k8,k9,k10;

int i,a,n,s;

for (a=2;a<=M;a++) /\* a是2-1000之间的整数，检查它是否完数 \*/

{n=0; /\* n用来累计a的因子的个数 \*/

s=a; /\* s用来存放尚未求出的因子之和，开始时等于a \*/

for (i=1;i<a;i++) /\* 检查i是否a的因子 \*/

if (a%i==0) /\* 如果i是a的因子 \*/

{n++; /\* n加1，表示新找到一个因子 \*/

s=s-i; /\* s减去已找到的因子，s的新值是尚未求出的因子之和 \*/

switch(n) /\* 将找到的因子赋给k1...k9，或k10 \*/

{case 1:

k1=i; break; /\* 找出的笫1个因子赋给k1 \*/

case 2:

k2=i; break; /\* 找出的笫2个因子赋给k2 \*/

case 3:

k3=i; break; /\* 找出的笫3个因子赋给k3 \*/

case 4:

k4=i; break; /\* 找出的笫4个因子赋给k4 \*/

case 5:

k5=i; break; /\* 找出的笫5个因子赋给k5 \*/

case 6:

k6=i; break; /\* 找出的笫6个因子赋给k6 \*/

case 7:

k7=i; break; /\* 找出的笫7个因子赋给k7 \*/

case 8:

k8=i; break; /\* 找出的笫8个因子赋给k8 \*/

case 9:

k9=i; break; /\*找出的笫9个因子赋给k9 \*/

case 10:

k10=i; break; /\* 找出的笫10个因子赋给k10 \*/

}

}

if (s==0)

{

printf("%d ,Its factors are ",a);

if (n>1) printf("%d,%d",k1,k2); /\* n>1表示a至少有2个因子 \*/

if (n>2) printf(",%d",k3); /\* n>2表示至少有3个因子，故应再输出一个因子 \*/

if (n>3) printf(",%d",k4); /\* n>3表示至少有4个因子，故应再输出一个因子 \*/

if (n>4) printf(",%d",k5); /\* 以下类似 \*/

if (n>5) printf(",%d",k6);

if (n>6) printf(",%d",k7);

if (n>7) printf(",%d",k8);

if (n>8) printf(",%d",k9);

if (n>9) printf(",%d",k10);

printf("\n");

}

}

return 0;

}

5-9-2

#include <stdio.h>

int main()

{int m,s,i;

for (m=2;m<1000;m++)

{s=0;

for (i=1;i<m;i++)

if ((m%i)==0) s=s+i;

if(s==m)

{printf("%d,its factors are ",m);

for (i=1;i<m;i++)

if (m%i==0) printf("%d ",i);

printf("\n");

}

}

return 0;

}

5-10

#include <stdio.h>

int main()

{

int i,n=20;

double a=2,b=1,s=0,t;

for (i=1;i<=n;i++)

{

s=s+a/b;

t=a,

a=a+b,

b=t;

}

printf("sum=%16.10f\n",s);

return 0;

}

5-11

#include <stdio.h>

int main()

{

double sn=100,hn=sn/2;

int n;

for (n=2;n<=10;n++)

{

sn=sn+2\*hn; /\*第n次落地时共经过的米数\*/

hn=hn/2; /\*第n次反跳高度\*/

}

printf("第10次落地时共经过%f米\n",sn);

printf("第10次反弹%f米\n",hn);

return 0;

}

5-12

#include <stdio.h>

int main()

{

int day,x1,x2;

day=9;

x2=1;

while(day>0)

{x1=(x2+1)\*2; /\*第1天的桃子数是第2天桃子数加1后的2倍.\*/

x2=x1;

day--;

}

printf("total=%d\n",x1);

return 0;

}

5-13

#include <stdio.h>

#include <math.h>

int main()

{

float a,x0,x1;

printf("enter a positive number:");

scanf("%f",&a);

x0=a/2;

x1=(x0+a/x0)/2;

do

{x0=x1;

x1=(x0+a/x0)/2;

}while(fabs(x0-x1)>=1e-5);

printf("The square root of %5.2f is %8.5f\n",a,x1);

return 0;

}

5-14

#include <stdio.h>

#include <math.h>

int main()

{double x1,x0,f,f1;

x1=1.5;

do

{x0=x1;

f=((2\*x0-4)\*x0+3)\*x0-6;

f1=(6\*x0-8)\*x0+3;

x1=x0-f/f1;

}while(fabs(x1-x0)>=1e-5);

printf("The root of equation is %5.2f\n",x1);

return 0;

}

5-15

#include <stdio.h>

#include <math.h>

int main()

{float x0,x1,x2,fx0,fx1,fx2;

do

{printf("enter x1 & x2:");

scanf("%f,%f",&x1,&x2);

fx1=x1\*((2\*x1-4)\*x1+3)-6;

fx2=x2\*((2\*x2-4)\*x2+3)-6;

}while(fx1\*fx2>0);

do

{x0=(x1+x2)/2;

fx0=x0\*((2\*x0-4)\*x0+3)-6;

if ((fx0\*fx1)<0)

{x2=x0;

fx2=fx0;

}

else

{x1=x0;

fx1=fx0;

}

}while(fabs (fx0)>=1e-5);

printf("x=%6.2f\n",x0);

return 0;

}

5-16

#include <stdio.h>

int main()

{int i,j,k;

for (i=0;i<=3;i++)

{for (j=0;j<=2-i;j++)

printf(" ");

for (k=0;k<=2\*i;k++)

printf("\*");

printf("\n");

}

for (i=0;i<=2;i++)

{for (j=0;j<=i;j++)

printf(" ");

for (k=0;k<=4-2\*i;k++)

printf("\*");

printf("\n");

}

return 0;

}

5-17

#include <stdio.h>

int main()

{

char i,j,k; /\*是a的对手;j是b的对手;k是c的对手\*/

for (i='x';i<='z';i++)

for (j='x';j<='z';j++)

if (i!=j)

for (k='x';k<='z';k++)

if (i!=k && j!=k)

if (i!='x' && k!='x' && k!='z')

printf("A--%c\nB--%c\nC--%c\n",i,j,k);

return 0;

}

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习题168

6-1

#include <stdio.h>

#include <math.h>

int main()

{int i,j,n,a[101];

for (i=1;i<=100;i++)

a[i]=i;

a[1]=0;

for (i=2;i<sqrt(100);i++)

for (j=i+1;j<=100;j++)

{if(a[i]!=0 && a[j]!=0)

if (a[j]%a[i]==0)

a[j]=0;

}

printf("\n");

for (i=2,n=0;i<=100;i++)

{ if(a[i]!=0)

{printf("%5d",a[i]);

n++;

}

if(n==10)

{printf("\n");

n=0;

}

}

printf("\n");

return 0;

}

6-2

#include <stdio.h>

int main()

{int i,j,min,temp,a[11];

printf("enter data:\n");

for (i=1;i<=10;i++)

{printf("a[%d]=",i);

scanf("%d",&a[i]);

}

printf("\n");

printf("The orginal numbers:\n");

for (i=1;i<=10;i++)

printf("%5d",a[i]);

printf("\n");

for (i=1;i<=9;i++)

{min=i;

for (j=i+1;j<=10;j++)

if (a[min]>a[j]) min=j;

temp=a[i];

a[i]=a[min];

a[min]=temp;

}

printf("\nThe sorted numbers:\n");

for (i=1;i<=10;i++)

printf("%5d",a[i]);

printf("\n");

return 0;

}

6-3

#include <stdio.h>

int main()

{

int a[3][3],sum=0;

int i,j;

printf("enter data:\n");

for (i=0;i<3;i++)

for (j=0;j<3;j++)

scanf("%3d",&a[i][j]);

for (i=0;i<3;i++)

sum=sum+a[i][i];

printf("sum=%6d\n",sum);

return 0;

}

6-4

#include <stdio.h>

int main()

{ int a[11]={1,4,6,9,13,16,19,28,40,100};

int temp1,temp2,number,end,i,j;

printf("array a:\n");

for (i=0;i<10;i++)

printf("%5d",a[i]);

printf("\n");

printf("insert data:");

scanf("%d",&number);

end=a[9];

if (number>end)

a[10]=number;

else

{for (i=0;i<10;i++)

{if (a[i]>number)

{temp1=a[i];

a[i]=number;

for (j=i+1;j<11;j++)

{temp2=a[j];

a[j]=temp1;

temp1=temp2;

}

break;

}

}

}

printf("Now array a:\n");

for (i=0;i<11;i++)

printf("%5d",a[i]);

printf("\n");

return 0;

}

6-5

#include <stdio.h>

#define N 5

int main()

{ int a[N],i,temp;

printf("enter array a:\n");

for (i=0;i<N;i++)

scanf("%d",&a[i]);

printf("array a:\n");

for (i=0;i<N;i++)

printf("%4d",a[i]);

for (i=0;i<N/2;i++) //循环的作用是将对称的元素的值互换

{ temp=a[i];

a[i]=a[N-i-1];

a[N-i-1]=temp;

}

printf("\nNow,array a:\n");

for (i=0;i<N;i++)

printf("%4d",a[i]);

printf("\n");

return 0;

}

6-6

#include <stdio.h>

#define N 10

int main()

{ int i,j,a[N][N];

for (i=0;i<N;i++)

{a[i][i]=1;

a[i][0]=1;

}

for (i=2;i<N;i++)

for (j=1;j<=i-1;j++)

a[i][j]=a[i-1][j-1]+a[i-1][j];

for (i=0;i<N;i++)

{for (j=0;j<=i;j++)

printf("%6d",a[i][j]);

printf("\n");

}

printf("\n");

return 0;

}

6-7

#include <stdio.h>

int main()

{ int a[15][15],i,j,k,p,n;

p=1;

while(p==1)

{printf("enter n(n=1--15):");

scanf("%d",&n);

if ((n!=0) && (n<=15) && (n%2!=0))

p=0;

}

for (i=1;i<=n;i++)

for (j=1;j<=n;j++)

a[i][j]=0;

j=n/2+1;

a[1][j]=1;

for (k=2;k<=n\*n;k++)

{i=i-1;

j=j+1;

if ((i<1) && (j>n))

{i=i+2;

j=j-1;

}

else

{if (i<1) i=n;

if (j>n) j=1;

}

if (a[i][j]==0)

a[i][j]=k;

else

{i=i+2;

j=j-1;

a[i][j]=k;

}

}

for (i=1;i<=n;i++)

{for (j=1;j<=n;j++)

printf("%5d",a[i][j]);

printf("\n");

}

return 0;

}

6-8

#include <stdio.h>

#define N 4

#define M 5 /\* 数组为4行5列 \*/

int main()

{

int i,j,k,a[N][M],max,maxj,flag;

printf("please input matrix:\n");

for (i=0;i<N;i++) /\* 输入数组 \*/

for (j=0;j<M;j++)

scanf("%d",&a[i][j]);

for (i=0;i<N;i++)

{max=a[i][0]; /\* 开始时假设a[i][0]最大 \*/

maxj=0; /\* 将列号0赋给maxj保存 \*/

for (j=0;j<M;j++) /\* 找出第i行中的最大数 \*/

if (a[i][j]>max)

{max=a[i][j]; /\* 将本行的最大数存放在max中 \*/

maxj=j; /\* 将最大数所在的列号存放在maxj中 \*/

}

flag=1; /\* 先假设是鞍点，以flag为1代表 \*/

for (k=0;k<N;k++)

if (max>a[k][maxj]) /\* 将最大数和其同列元素相比 \*/

{flag=0; /\* 如果max不是同列最小，表示不是鞍点令flag1为0 \*/

continue;}

if(flag) /\* 如果flag1为1表示是鞍点 \*/

{printf("a[%d][%d]=%d\n",i,maxj,max); /\* 输出鞍点的值和所在行列号 \*/

break;

}

}

if(!flag) /\* 如果flag为0表示鞍点不存在 \*/

printf("It is not exist!\n");

return 0;

}

6-9

#include <stdio.h>

#define N 15

int main()

{ int i,number,top,bott,mid,loca,a[N],flag=1,sign;

char c;

printf("enter data:\n");

scanf("%d",&a[0]);

i=1;

while(i<N)

{scanf("%d",&a[i]);

if (a[i]>=a[i-1])

i++;

else

printf("enter this data again:\n");

}

printf("\n");

for (i=0;i<N;i++)

printf("%5d",a[i]);

printf("\n");

while(flag)

{printf("input number to look for:");

scanf("%d",&number);

sign=0;

top=0; //top是查找区间的起始位置

bott=N-1; //bott是查找区间的最末位置

if ((number<a[0])||(number>a[N-1])) //要查的数不在查找区间内

loca=-1; // 表示找不到

while ((!sign) && (top<=bott))

{mid=(bott+top)/2;

if (number==a[mid])

{loca=mid;

printf("Has found %d, its position is %d\n",number,loca+1);

sign=1;

}

else if (number<a[mid])

bott=mid-1;

else

top=mid+1;

}

if(!sign||loca==-1)

printf("cannot find %d.\n",number);;

printf("continu or not(Y/N)?");

scanf(" %c",&c);

if (c=='N'||c=='n')

flag=0;

}

return 0;

}

6-10

#include <stdio.h>

int main()

{int i,j,upp,low,dig,spa,oth;

char text[3][80];

upp=low=dig=spa=oth=0;

for (i=0;i<3;i++)

{ printf("please input line %d:\n",i+1);

gets(text[i]);

for (j=0;j<80 && text[i][j]!='\0';j++)

{if (text[i][j]>='A'&& text[i][j]<='Z')

upp++;

else if (text[i][j]>='a' && text[i][j]<='z')

low++;

else if (text[i][j]>='0' && text[i][j]<='9')

dig++;

else if (text[i][j]==' ')

spa++;

else

oth++;

}

}

printf("\nupper case: %d\n",upp);

printf("lower case: %d\n",low);

printf("digit : %d\n",dig);

printf("space : %d\n",spa);

printf("other : %d\n",oth);

return 0;

}

6-11

#include <stdio.h>

int main()

{ char a[5]={'\*','\*','\*','\*','\*'};

int i,j,k;

char space=' ';

for (i=0;i<5;i++)

{ printf("\n");

printf(" ");

for (j=1;j<=i;j++)

printf("%c",space);

for (k=0;k<5;k++)

printf("%c",a[k]);

}

printf("\n");

return 0;

}

6-12a-c

#include <stdio.h>

int main()

{ int j,n;

char ch[80],tran[80];

printf("input cipher code:");

gets(ch);

printf("\ncipher code :%s",ch);

j=0;

while (ch[j]!='\0')

{ if ((ch[j]>='A') && (ch[j]<='Z'))

tran[j]=155-ch[j];

else if ((ch[j]>='a') && (ch[j]<='z'))

tran[j]=219-ch[j];

else

tran[j]=ch[j];

j++;

}

n=j;

printf("\noriginal text:");

for (j=0;j<n;j++)

putchar(tran[j]);

printf("\n");

return 0;

}

6-12b

#include <stdio.h>

int main()

{int j,n;

char ch[80];

printf("input cipher code:\n");

gets(ch);

printf("\ncipher code:%s\n",ch);

j=0;

while (ch[j]!='\0')

{ if ((ch[j]>='A') && (ch[j]<='Z'))

ch[j]=155-ch[j];

else if ((ch[j]>='a') && (ch[j]<='z'))

ch[j]=219-ch[j];

else

ch[j]=ch[j];

j++;

}

n=j;

printf("original text:");

for (j=0;j<n;j++)

putchar(ch[j]);

printf("\n");

return 0;

}

6-13

#include <stdio.h>

int main()

{ char s1[80],s2[40];

int i=0,j=0;

printf("input string1:");

scanf("%s",s1);

printf("input string2:");

scanf("%s",s2);

while (s1[i]!='\0')

i++;

while(s2[j]!='\0')

s1[i++]=s2[j++];

s1[i]='\0';

printf("\nThe new string is:%s\n",s1);

return 0;

}

6-14

#include <stdio.h>

int main()

{ int i,resu;

char s1[100],s2[100];

printf("input string1:");

gets(s1);

printf("\ninput string2:");

gets(s2);

i=0;

while ((s1[i]==s2[i]) && (s1[i]!='\0'))i++;

if (s1[i]=='\0' && s2[i]=='\0')

resu=0;

else

resu=s1[i]-s2[i];

printf("\nresult:%d.\n",resu);

return 0;

}

6-15

#include <stdio.h>

#include <string.h>

int main()

{ char s1[80],s2[80];

int i;

printf("input s2:");

scanf("%s",s2);

for (i=0;i<=strlen(s2);i++)

s1[i]=s2[i];

printf("s1:%s\n",s1);

return 0;

}

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习题218

7-1-1

#include <stdio.h>

int main()

{int hcf(int,int);

int lcd(int,int,int);

int u,v,h,l;

scanf("%d,%d",&u,&v);

h=hcf(u,v);

printf("H.C.F=%d\n",h);

l=lcd(u,v,h);

printf("L.C.D=%d\n",l);

return 0;

}

int hcf(int u,int v)

{int t,r;

if (v>u)

{t=u;u=v;v=t;}

while ((r=u%v)!=0)

{u=v;

v=r;}

return(v);

}

int lcd(int u,int v,int h)

{

return(u\*v/h);

}

7-1-2

#include <stdio.h>

int Hcf,Lcd;

int main()

{void hcf(int,int);

void lcd(int,int);

int u,v;

scanf("%d,%d",&u,&v);

hcf(u,v);

lcd(u,v);

printf("H.C.F=%d\n",Hcf);

printf("L.C.D=%d\n",Lcd);

return 0;

}

void hcf(int u,int v)

{int t,r;

if (v>u)

{t=u;u=v;v=t;}

while ((r=u%v)!=0)

{u=v;

v=r;

}

Hcf=v;

}

void lcd(int u,int v)

{

Lcd=u\*v/Hcf;

}

7-2

#include <stdio.h>

#include <math.h>

float x1,x2,disc,p,q;

int main()

{void greater\_than\_zero(float,float);

void equal\_to\_zero(float,float);

void smaller\_than\_zero(float,float);

float a,b,c;

printf("input a,b,c:");

scanf("%f,%f,%f",&a,&b,&c);

printf("equation: %5.2f\*x\*x+%5.2f\*x+%5.2f=0\n",a,b,c);

disc=b\*b-4\*a\*c;

printf("root:\n");

if (disc>0)

{

greater\_than\_zero(a,b);

printf("x1=%f\t\tx2=%f\n",x1,x2);

}

else if (disc==0)

{equal\_to\_zero(a,b);

printf("x1=%f\t\tx2=%f\n",x1,x2);

}

else

{smaller\_than\_zero(a,b);

printf("x1=%f+%fi\tx2=%f-%fi\n",p,q,p,q);

}

return 0;

}

void greater\_than\_zero(float a,float b)

{x1=(-b+sqrt(disc))/(2\*a);

x2=(-b-sqrt(disc))/(2\*a);

}

void equal\_to\_zero(float a,float b)

{

x1=x2=(-b)/(2\*a);

}

void smaller\_than\_zero(float a,float b)

{

p=-b/(2\*a);

q=sqrt(-disc)/(2\*a);

}

7-3

#include <stdio.h>

int main()

{int prime(int);

int n;

printf("input an integer:");

scanf("%d",&n);

if (prime(n))

printf("%d is a prime.\n",n);

else

printf("%d is not a prime.\n",n);

return 0;

}

int prime(int n)

{int flag=1,i;

for (i=2;i<n/2 && flag==1;i++)

if (n%i==0)

flag=0;

return(flag);

}

7-4

#include <stdio.h>

#define N 3

int array[N][N];

int main()

{ void convert(int array[][3]);

int i,j;

printf("input array:\n");

for (i=0;i<N;i++)

for (j=0;j<N;j++)

scanf("%d",&array[i][j]);

printf("\noriginal array :\n");

for (i=0;i<N;i++)

{for (j=0;j<N;j++)

printf("%5d",array[i][j]);

printf("\n");

}

convert(array);

printf("convert array:\n");

for (i=0;i<N;i++)

{for (j=0;j<N;j++)

printf("%5d",array[i][j]);

printf("\n");

}

return 0;

}

void convert(int array[][3])

{int i,j,t;

for (i=0;i<N;i++)

for (j=i+1;j<N;j++)

{t=array[i][j];

array[i][j]=array[j][i];

array[j][i]=t;

}

}

#include <stdio.h>

#include <string.h>

int main()

{void inverse(char str[]);

char str[100];

printf("input string:");

scanf("%s",str);

inverse(str);

printf("inverse string:%s\n",str);

return 0;

}

void inverse(char str[])

{char t;

int i,j;

for (i=0,j=strlen(str);i<(strlen(str)/2);i++,j--)

{t=str[i];

str[i]=str[j-1];

str[j-1]=t;

}

}

7-6

#include <stdio.h>

int main()

{void concatenate(char string1[],char string2[],char string[]);

char s1[100],s2[100],s[100];

printf("input string1:");

scanf("%s",s1);

printf("input string2:");

scanf("%s",s2);

concatenate(s1,s2,s);

printf("\nThe new string is %s\n",s);

return 0;

}

void concatenate(char string1[],char string2[],char string[])

{int i,j;

for (i=0;string1[i]!='\0';i++)

string[i]=string1[i];

for(j=0;string2[j]!='\0';j++)

string[i+j]=string2[j];

string[i+j]='\0';

}

7-7

#include <stdio.h>

int main()

{void cpy(char [],char []);

char str[80],c[80];

printf("input string:");

gets(str);

cpy(str,c);

printf("The vowel letters are:%s\n",c);

return 0;

}

void cpy(char s[],char c[])

{ int i,j;

for (i=0,j=0;s[i]!='\0';i++)

if (s[i]=='a'||s[i]=='A'||s[i]=='e'||s[i]=='E'||s[i]=='i'||

s[i]=='I'||s[i]=='o'||s[i]=='O'||s[i]=='u'||s[i]=='U')

{c[j]=s[i];

j++;

}

c[j]='\0';

}

7-8

#include <stdio.h>

#include <string.h>

int main()

{char str[80];

void insert(char []);

printf("input four digits:");

scanf("%s",str);

insert(str);

return 0;

}

void insert(char str[])

{int i;

for (i=strlen(str);i>0;i--)

{str[2\*i]=str[i];

str[2\*i-1]=' ';

}

printf("output:\n%s\n",str);

}

7-9

#include <stdio.h>

int letter,digit,space,others;

int main()

{void count(char []);

char text[80];

printf("input string:\n");

gets(text);

printf("string:");

puts(text);

letter=0;

digit=0;

space=0;

others=0;

count(text);

printf("\nletter:%d\ndigit:%d\nspace:%d\nothers:%d\n",letter,digit,space,others);

return 0;

}

void count(char str[])

{int i;

for (i=0;str[i]!='\0';i++)

if ((str[i]>='a'&& str[i]<='z')||(str[i]>='A' && str[i]<='Z'))

letter++;

else if (str[i]>='0' && str [i]<='9')

digit++;

else if (str[i]==32)

space++;

else

others++;

}

7-10

#include <stdio.h>

#include <string.h>

int main()

{int alphabetic(char);

int longest(char []);

int i;

char line[100];

printf("input one line:\n");

gets(line);

printf("The longest word is :");

for (i=longest(line);alphabetic(line[i]);i++)

printf("%c",line[i]);

printf("\n");

return 0;

}

int alphabetic(char c)

{if ((c>='a' && c<='z')||(c>='A'&&c<='z'))

return(1);

else

return(0);

}

int longest(char string[])

{int len=0,i,length=0,flag=1,place=0,point;

for (i=0;i<=strlen(string);i++)

if (alphabetic(string[i]))

if (flag)

{point=i;

flag=0;

}

else

len++;

else

{flag=1;

if (len>=length)

{length=len;

place=point;

len=0;

}

}

return(place);

}

7-11

#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;

}

}

7-12

#include <stdio.h>

#include <math.h>

int main()

{float solut(float a,float b,float c,float d);

float a,b,c,d;

printf("input a,b,c,d:");

scanf("%f,%f,%f,%f",&a,&b,&c,&d);

printf("x=%10.7f\n",solut(a,b,c,d));

return 0;

}

float solut(float a,float b,float c,float d)

{float x=1,x0,f,f1;

do

{x0=x;

f=((a\*x0+b)\*x0+c)\*x0+d;

f1=(3\*a\*x0+2\*b)\*x0+c;

x=x0-f/f1;

}

while(fabs(x-x0)>=1e-3);

return(x);

}

7-13

#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/5.0;

}

}

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-\*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/5.0;

}

}

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

int main()

{void input(int [],char name[][8]);

void sort(int [],char name[][8]);

void search(int ,int [],char name[][8]);

int num[N],number,flag=1,c;

char name[N][8];

input(num,name);

sort(num,name);

while (flag==1)

{printf("\ninput number to look for:");

scanf("%d",&number);

search(number,num,name);

printf("continue ot not(Y/N)?");

getchar();

c=getchar();

if (c=='N'||c=='n')

flag=0;

}

return 0;

}

void input(int num[],char name[N][8])

{int i;

for (i=0;i<N;i++)

{printf("input NO.: ");

scanf("%d",&num[i]);

printf("input name: ");

getchar();

gets(name[i]);

}

}

void sort(int num[],char name[N][8])

{ int i,j,min,templ;

char temp2[8];

for (i=0;i<N-1;i++)

{min=i;

for (j=i;j<N;j++)

if (num[min]>num[j]) min=j;

templ=num[i];

strcpy(temp2,name[i]);

num[i]=num[min];

strcpy (name[i],name[min]);

num[min]=templ;

strcpy(name[min],temp2);

}

printf("\n result:\n");

for (i=0;i<N;i++)

printf("\n %5d%10s",num[i],name[i]);

}

void search(int n,int num[],char name[N][8])

{int top,bott,mid,loca,sign;

top=0;

bott=N-1;

loca=0;

sign=1;

if ((n<num[0])||(n>num[N-1]))

loca=-1;

while((sign==1) && (top<=bott))

{mid=(bott+top)/2;

if (n==num[mid])

{loca=mid;

printf("NO. %d , his name is %s.\n",n,name[loca]);

sign=-1;

}

else if (n<num[mid])

bott=mid-1;

else

top=mid+1;

}

if (sign==1 || loca==-1)

printf("%d not been found.\n",n);

}

7-16

#include <stdio.h>

#define MAX 1000

int main()

{ int htoi(char s[]);

int c,i,flag,flag1;

char t[MAX];

i=0;

flag=0;

flag1=1;

printf("input a HEX number:");

while((c=getchar())!='\0' && i<MAX&& flag1)

{if (c>='0' && c<='9'||c>='a' && c<='f'||c>='A' && c<='F')

{flag=1;

t[i++]=c;

}

else if (flag)

{t[i]='\0';

printf("decimal number %d\n",htoi(t));

printf("continue or not?");

c=getchar();

if (c=='N'||c=='n')

flag1=0;

else

{flag=0;

i=0;

printf("\ninput a HEX number:");

}

}

}

return 0;

}

int htoi(char s[])

{ int i,n;

n=0;

for (i=0;s[i]!='\0';i++)

{if (s[i]>='0'&& s[i]<='9')

n=n\*16+s[i]-'0';

if (s[i]>='a' && s[i]<='f')

n=n\*16+s[i]-'a'+10;

if (s[i]>='A' && s[i]<='F')

n=n\*16+s[i]-'A'+10;

}

return(n);

}

7-17

#include <stdio.h>

int main()

{ void convert(int n);

int number;

printf("input an integer: ");

scanf("%d",&number);

printf("output: ");

if (number<0)

{putchar('-');putchar(' '); /\* 先输出一个‘-’号和空格 \*/

number=-number;

}

convert(number);

printf("\n");

return 0;

}

void convert(int n)

{ int i;

if ((i=n/10)!=0)

convert(i);

putchar(n%10+'0');

putchar(32);

}

7-18

#include <stdio.h>

int main()

{int sum\_day(int month,int day);

int leap(int year);

int year,month,day,days;

printf("input date(year,month,day):");

scanf("%d,%d,%d",&year,&month,&day);

printf("%d/%d/%d ",year,month,day);

days=sum\_day(month,day); /\* 调用函数sum\_day \*/

if(leap(year)&&month>=3) /\* 调用函数leap \*/

days=days+1;

printf("is the %dth day in this year.\n",days);

return 0;

}

int sum\_day(int month,int day) /\* 函数sum\_day:计算日期 \*/

{int day\_tab[13]={0,31,28,31,30,31,30,31,31,30,31,30,31};

int i;

for (i=1;i<month;i++)

day+=day\_tab[i]; /\* 累加所在月之前天数 \*/

return(day);

} /\* 函数leap:判断是否为闰年 \*/

int leap(int year)

{int leap;

leap=year%4==0&&year%100!=0||year%400==0;

return(leap);

}

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习题291

8-1

#include <stdio.h>

int main()

{ void swap(int \*p1,int \*p2);

int n1,n2,n3;

int \*p1,\*p2,\*p3;

printf("input three integer n1,n2,n3:");

scanf("%d,%d,%d",&n1,&n2,&n3);

p1=&n1;

p2=&n2;

p3=&n3;

if(n1>n2) swap(p1,p2);

if(n1>n3) swap(p1,p3);

if(n2>n3) swap(p2,p3);

printf("Now,the order is:%d,%d,%d\n",n1,n2,n3);

return 0;

}

void swap(int \*p1,int \*p2)

{int p;

p=\*p1; \*p1=\*p2; \*p2=p;

}

#include <stdio.h>

#include <string.h>

int main()

{void swap(char \*,char \*);

char str1[20],str2[20],str3[20];

printf("input three line:\n");

gets(str1);

gets(str2);

gets(str3);

if(strcmp(str1,str2)>0) swap(str1,str2);

if(strcmp(str1,str3)>0) swap(str1,str3);

if(strcmp(str2,str3)>0) swap(str2,str3);

printf("Now,the order is:\n");

printf("%s\n%s\n%s\n",str1,str2,str3);

return 0;

}

void swap(char \*p1,char \*p2)

{char p[20];

strcpy(p,p1);strcpy(p1,p2);strcpy(p2,p);

}

8-3

#include <stdio.h>

int main()

{ void input(int \*);

void max\_min\_value(int \*);

void output(int \*);

int number[10];

input(number);

max\_min\_value(number);

output(number);

return 0;

}

void input(int \*number)

{int i;

printf("input 10 numbers:");

for (i=0;i<10;i++)

scanf("%d",&number[i]);

}

void max\_min\_value(int \*number)

{ int \*max,\*min,\*p,temp;

max=min=number;

for (p=number+1;p<number+10;p++)

if (\*p>\*max) max=p;

else if (\*p<\*min) min=p;

temp=number[0];number[0]=\*min;\*min=temp;

if(max==number) max=min;

temp=number[9];number[9]=\*max;\*max=temp;

}

void output(int \*number)

{int \*p;

printf("Now,they are: ");

for (p=number;p<number+10;p++)

printf("%d ",\*p);

printf("\n");

}

8-4

#include <stdio.h>

int main()

{void move(int [20],int,int);

int number[20],n,m,i;

printf("how many numbers?");

scanf("%d",&n);

printf("input %d numbers:\n",n);

for (i=0;i<n;i++)

scanf("%d",&number[i]);

printf("how many place you want move?");

scanf("%d",&m);

move(number,n,m);

printf("Now,they are:\n");

for (i=0;i<n;i++)

printf("%d ",number[i]);

printf("\n");

return 0;

}

void move(int array[20],int n,int m)

{int \*p,array\_end;

array\_end=\*(array+n-1);

for (p=array+n-1;p>array;p--)

\*p=\*(p-1);

\*array=array\_end;

m--;

if (m>0) move(array,n,m);

}

8-5

#include <stdio.h>

int main()

{int i,k,m,n,num[50],\*p;

printf("\ninput number of person: n=");

scanf("%d",&n);

p=num;

for (i=0;i<n;i++)

\*(p+i)=i+1;

i=0;

k=0;

m=0;

while (m<n-1)

{if (\*(p+i)!=0) k++;

if (k==3)

{\*(p+i)=0;

k=0;

m++;

}

i++;

if (i==n) i=0;

}

while(\*p==0) p++;

printf("The last one is NO.%d\n",\*p);

return 0;

}

8-6

#include <stdio.h>

int main()

{int length(char \*p);

int len;

char str[20];

printf("input string: ");

scanf("%s",str);

len=length(str);

printf("The length of string is %d.\n",len);

return 0;

}

int length(char \*p)

{int n;

n=0;

while (\*p!='\0')

{n++;

p++;

}

return(n);

}

8-7

#include <stdio.h>

#include <string.h>

int main()

{void copystr(char \*,char \*,int);

int m;

char str1[20],str2[20];

printf("input string:");

gets(str1);

printf("which character that begin to copy?");

scanf("%d",&m);

if (strlen(str1)<m)

printf("input error!");

else

{copystr(str1,str2,m);

printf("result:%s\n",str2);

}

return 0;

}

void copystr(char \*p1,char \*p2,int m)

{int n;

n=0;

while (n<m-1)

{n++;

p1++;

}

while (\*p1!='\0')

{\*p2=\*p1;

p1++;

p2++;

}

\*p2='\0';

}

8-8

#include <stdio.h>

int main()

{int upper=0,lower=0,digit=0,space=0,other=0,i=0;

char \*p,s[20];

printf("input string: ");

while ((s[i]=getchar())!='\n') i++;

p=&s[0];

while (\*p!='\n')

{if (('A'<=\*p) && (\*p<='Z'))

++upper;

else if (('a'<=\*p) && (\*p<='z'))

++lower;

else if (\*p==' ')

++space;

else if ((\*p<='9') && (\*p>='0'))

++digit;

else

++other;

p++;

}

printf("upper case:%d lower case:%d",upper,lower);

printf(" space:%d digit:%d other:%d\n",space,digit,other);

return 0;

}

8-9

#include <stdio.h>

int main()

{void move(int \*pointer);

int a[3][3],\*p,i;

printf("input matrix:\n");

for (i=0;i<3;i++)

scanf("%d %d %d",&a[i][0],&a[i][1],&a[i][2]);

p=&a[0][0];

move(p);

printf("Now,matrix:\n");

for (i=0;i<3;i++)

printf("%d %d %d\n",a[i][0],a[i][1],a[i][2]);

return 0;

}

void move(int \*pointer)

{int i,j,t;

for (i=0;i<3;i++)

for (j=i;j<3;j++)

{t=\*(pointer+3\*i+j);

\*(pointer+3\*i+j)=\*(pointer+3\*j+i);

\*(pointer+3\*j+i)=t;

}

}

8-10-1

#include <stdio.h>

int main()

{void change(int \*p);

int a[5][5],\*p,i,j;

printf("input matrix:\n");

for (i=0;i<5;i++)

for (j=0;j<5;j++)

scanf("%d",&a[i][j]);

p=&a[0][0];

change(p);

printf("Now,matrix:\n");

for (i=0;i<5;i++)

{for (j=0;j<5;j++)

printf("%d ",a[i][j]);

printf("\n");

}

return 0;

}

void change(int \*p)

{int i,j,temp;

int \*pmax,\*pmin;

pmax=p;

pmin=p;

for (i=0;i<5;i++)

for (j=i;j<5;j++)

{if (\*pmax<\*(p+5\*i+j)) pmax=p+5\*i+j;

if (\*pmin>\*(p+5\*i+j)) pmin=p+5\*i+j;

}

temp=\*(p+12);

\*(p+12)=\*pmax;

\*pmax=temp;

temp=\*p;

\*p=\*pmin;

\*pmin=temp;

pmin=p+1;

for (i=0;i<5;i++)

for (j=0;j<5;j++)

if (((p+5\*i+j)!=p) && (\*pmin>\*(p+5\*i+j))) pmin=p+5\*i+j;

temp=\*pmin;

\*pmin=\*(p+4);

\*(p+4)=temp;

pmin=p+1;

for (i=0;i<5;i++)

for (j=0;j<5;j++)

if (((p+5\*i+j)!=(p+4))&&((p+5\*i+j)!=p)&&(\*pmin>\*(p+5\*i+j)))pmin=p+5\*i+j;

temp=\*pmin;

\*pmin=\*(p+20);

\*(p+20)=temp;

pmin=p+1;

for (i=0;i<5;i++)

for (j=0;j<5;j++)

if (((p+5\*i+j)!=p) && ((p+5\*i+j)!=(p+4)) && ((p+5\*i+j)!=(p+20)) && (\*pmin>\*(p+5\*i+j)))

pmin=p+5\*i+j;

temp=\*pmin;

\*pmin=\*(p+24);

\*(p+24)=temp;

}

8-10-2

#include <stdio.h>

int main()

{void change(int \*p);

int a[5][5],\*p,i,j;

printf("input matrix:\n");

for (i=0;i<5;i++)

for (j=0;j<5;j++)

scanf("%d",&a[i][j]);

p=&a[0][0];

change(p);

printf("Now,matrix:\n");

for (i=0;i<5;i++)

{for (j=0;j<5;j++)

printf("%d ",a[i][j]);

printf("\n");

}

return 0;

}

void change(int \*p) //交换函数

{int i,j,temp;

int \*pmax,\*pmin;

pmax=p;

pmin=p;

for (i=0;i<5;i++) //找最大值和最小值的地址,并赋给 pmax,pmin

for (j=i;j<5;j++)

{if (\*pmax<\*(p+5\*i+j)) pmax=p+5\*i+j;

if (\*pmin>\*(p+5\*i+j)) pmin=p+5\*i+j;

}

temp=\*(p+12); //将最大值与中心元素互换

\*(p+12)=\*pmax;

\*pmax=temp;

temp=\*p; //将最小值与左上角元素互换

\*p=\*pmin;

\*pmin=temp;

pmin=p+1;

//将a[0][1]的地址赋给pmin，从该位置开始找最小的元素

for (i=0;i<5;i++) //找第二最小值的地址赋给 pmin

for (j=0;j<5;j++)

{if(i==0 && j==0) continue;

if (\*pmin > \*(p+5\*i+j)) pmin=p+5\*i+j;

}

temp=\*pmin; //将第二最小值与右上角元素互换

\*pmin=\*(p+4);

\*(p+4)=temp;

pmin=p+1;

for (i=0;i<5;i++) //找第三最小值的地址赋给pmin

for (j=0;j<5;j++)

{if((i==0 && j==0) ||(i==0 && j==4)) continue;

if(\*pmin>\*(p+5\*i+j)) pmin=p+5\*i+j;

}

temp=\*pmin; // 将第三最小值与左下角元素互换

\*pmin=\*(p+20);

\*(p+20)=temp;

pmin=p+1;

for (i=0;i<5;i++) // 找第四最小值的地址赋给pmin

for (j=0;j<5;j++)

{if ((i==0 && j==0) ||(i==0 && j==4)||(i==4 && j==0)) continue;

if (\*pmin>\*(p+5\*i+j)) pmin=p+5\*i+j;

}

temp=\*pmin; //将第四最小值与右下角元素互换

\*pmin=\*(p+24);

\*(p+24)=temp;

}

8-11-1

#include <stdio.h>

#include <string.h>

int main()

{void sort(char s[][6]);

int i;

char str[10][6];

printf("input 10 strings:\n");

for (i=0;i<10;i++)

scanf("%s",str[i]);

sort(str);

printf("Now,the sequence is:\n");

for (i=0;i<10;i++)

printf("%s\n",str[i]);

return 0;

}

void sort(char s[10][6])

{int i,j;

char \*p,temp[10];

p=temp;

for (i=0;i<9;i++)

for (j=0;j<9-i;j++)

if (strcmp(s[j],s[j+1])>0)

{strcpy(p,s[j]);

strcpy(s[j],s[+j+1]);

strcpy(s[j+1],p);

}

}

8-11-2

#include <stdio.h>

#include <string.h>

int main()

{void sort(char (\*p)[6]);

int i;

char str[10][6];

char (\*p)[6];

printf("input 10 strings:\n");

for (i=0;i<10;i++)

scanf("%s",str[i]);

p=str;

sort(p);

printf("Now,the sequence is:\n");

for (i=0;i<10;i++)

printf("%s\n",str[i]);

return 0;

}

void sort(char (\*s)[6])

{int i,j;

char temp[6],\*t=temp;

for (i=0;i<9;i++)

for (j=0;j<9-i;j++)

if (strcmp(s[j],s[j+1])>0)

{strcpy(t,s[j]);

strcpy(s[j],s[+j+1]);

strcpy(s[j+1],t);

}

}

8-12

#include <stdio.h>

#include <string.h>

int main()

{void sort(char \*[]);

int i;

char \*p[10],str[10][20];

for (i=0;i<10;i++)

p[i]=str[i];

printf("input 10 strings:\n");

for (i=0;i<10;i++)

scanf("%s",p[i]);

sort(p);

printf("Now,the sequence is:\n");

for (i=0;i<10;i++)

printf("%s\n",p[i]);

return 0;

}

void sort(char \*s[])

{int i,j;

char \*temp;

for (i=0;i<9;i++)

for (j=0;j<9-i;j++)

if (strcmp(\*(s+j),\*(s+j+1))>0)

{temp=\*(s+j);

\*(s+j)=\*(s+j+1);

\*(s+j+1)=temp;

}

}

8-13

#include<stdio.h>

#include<math.h>

int main()

{float integral(float(\*)(float),float,float,int);//对integarl函数的声明

float fsin(float); //对fsin函数的声明

float fcos(float); //对fcos函数的声明

float fexp(float); //对fexp函数的声明

float a1,b1,a2,b2,a3,b3,c,(\*p)(float);

int n=20;

printf("input a1,b1:");

scanf("%f,%f",&a1,&b1);

printf("input a2,b2:");

scanf("%f,%f",&a2,&b2);

printf("input a3,b3:");

scanf("%f,%f",&a3,&b3);

p=fsin;

c=integral(p,a1,b1,n);

printf("The integral of sin(x) is:%f\n",c);

p=fcos;

c=integral(p,a2,b2,n);

printf("The integral of cos(x) is:%f\n",c);

p=fexp;

c=integral(p,a3,b3,n);

printf("The integral of exp(x) is:%f\n",c);

return 0;

}

float integral(float(\*p)(float),float a,float b,int n)

{int i;

float x,h,s;

h=(b-a)/n;

x=a;

s=0;

for(i=1;i<=n;i++)

{x=x+h;

s=s+(\*p)(x)\*h;

}

return(s);

}

float fsin(float x)

{return sin(x);}

float fcos(float x)

{return cos(x);}

float fexp(float x)

{return exp(x);}

8-14

#include <stdio.h>

int main()

{void sort (char \*p,int m);

int i,n;

char \*p,num[20];

printf("input n:");

scanf("%d",&n);

printf("please input these numbers:\n");

for (i=0;i<n;i++)

scanf("%d",&num[i]);

p=&num[0];

sort(p,n);

printf("Now,the sequence is:\n");

for (i=0;i<n;i++)

printf("%d ",num[i]);

printf("\n");

return 0;

}

void sort (char \*p,int m) // 将n个数逆序排列函数

{int i;

char temp, \*p1,\*p2;

for (i=0;i<m/2;i++)

{p1=p+i;

p2=p+(m-1-i);

temp=\*p1;

\*p1=\*p2;

\*p2=temp;

}

}

8-15

#include <stdio.h>

int main()

{void avsco(float \*,float \*);

void avcour1(char (\*)[10],float \*);

void fali2(char course[5][10],int num[],float \*pscore,float aver[4]);

void good(char course[5][10],int num[4],float \*pscore,float aver[4]);

int i,j,\*pnum,num[4];

float score[4][5],aver[4],\*pscore,\*paver;

char course[5][10],(\*pcourse)[10];

printf("input course:\n");

pcourse=course;

for (i=0;i<5;i++)

scanf("%s",course[i]);

printf("input NO. and scores:\n");

printf("NO.");

for (i=0;i<5;i++)

printf(",%s",course[i]);

printf("\n");

pscore=&score[0][0];

pnum=&num[0];

for (i=0;i<4;i++)

{scanf("%d",pnum+i);

for (j=0;j<5;j++)

scanf("%f",pscore+5\*i+j);

}

paver=&aver[0];

printf("\n\n");

avsco(pscore,paver); // 求出每个学生的平均成绩

avcour1(pcourse,pscore); // 求出第一门课的平均成绩

printf("\n\n");

fali2(pcourse,pnum,pscore,paver); // 找出2门课不及格的学生

printf("\n\n");

good(pcourse,pnum,pscore,paver); // 找出成绩好的学生

return 0;

}

void avsco(float \*pscore,float \*paver) // 求每个学生的平均成绩的函数

{int i,j;

float sum,average;

for (i=0;i<4;i++)

{sum=0.0;

for (j=0;j<5;j++)

sum=sum+(\*(pscore+5\*i+j)); //累计每个学生的各科成绩

average=sum/5; //计算平均成绩

\*(paver+i)=average;

}

}

void avcour1(char (\*pcourse)[10],float \*pscore) // 求第一课程的平均成绩的函数

{int i;

float sum,average1;

sum=0.0;

for (i=0;i<4;i++)

sum=sum+(\*(pscore+5\*i)); //累计每个学生的得分

average1=sum/4; //计算平均成绩

printf("course 1:%s average score:%7.2f\n",\*pcourse,average1);

}

void fali2(char course[5][10],int num[],float \*pscore,float aver[4])

// 找两门以上课程不及格的学生的函数

{int i,j,k,labe1;

printf(" ==========Student who is fail in two courses======= \n");

printf("NO. ");

for (i=0;i<5;i++)

printf("%11s",course[i]);

printf(" average\n");

for (i=0;i<4;i++)

{labe1=0;

for (j=0;j<5;j++)

if (\*(pscore+5\*i+j)<60.0) labe1++;

if (labe1>=2)

{printf("%d",num[i]);

for (k=0;k<5;k++)

printf("%11.2f",\*(pscore+5\*i+k));

printf("%11.2f\n",aver[i]);

}

}

}

void good(char course[5][10],int num[4],float \*pscore,float aver[4])

// 找成绩优秀学生(各门85以上或平均90分以上)的函数

{int i,j,k,n;

printf(" ======Students whose score is good======\n");

printf("NO. ");

for (i=0;i<5;i++)

printf("%11s",course[i]);

printf(" average\n");

for (i=0;i<4;i++)

{n=0;

for (j=0;j<5;j++)

if (\*(pscore+5\*i+j)>85.0) n++;

if ((n==5)||(aver[i]>=90))

{printf("%d",num[i]);

for (k=0;k<5;k++)

printf("%11.2f",\*(pscore+5\*i+k));

printf("%11.2f\n",aver[i]);

}

}

}

8-16

#include <stdio.h>

int main()

{

char str[50],\*pstr;

int i,j,k,m,e10,digit,ndigit,a[10],\*pa;

printf("input a string:\n");

gets(str);

pstr=&str[0]; /\*字符指针pstr置于数组str 首地址\*/

pa=&a[0]; /\*指针pa置于a数组首地址\*/

ndigit=0; /\*ndigit代表有多少个整数\*/

i=0; /\*代表字符串中的第几个字符\*/

j=0;

while(\*(pstr+i)!='\0')

{if((\*(pstr+i)>='0') && (\*(pstr+i)<='9'))

j++;

else

{if (j>0)

{digit=\*(pstr+i-1)-48; /\*将个数位赋予digit\*/

k=1;

while (k<j) /\*将含有两位以上数的其它位的数值累计于digit\*/

{e10=1;

for (m=1;m<=k;m++)

e10=e10\*10; /\*e10代表该位数所应乘的因子\*/

digit=digit+(\*(pstr+i-1-k)-48)\*e10; /\*将该位数的数值\累加于digit\*/

k++; /\*位数K自增\*/

}

\*pa=digit; /\*将数值赋予数组a\*/

ndigit++;

pa++; /\*指针pa指向a数组下一元素\*/

j=0;

}

}

i++;

}

if (j>0) /\*以数字结尾字符串的最后一个数据\*/

{digit=\*(pstr+i-1)-48; /\*将个数位赋予digit\*/

k=1;

while (k<j) /\* 将含有两位以上数的其它位的数值累加于digit\*/

{e10=1;

for (m=1;m<=k;m++)

e10=e10\*10; /\*e10代表位数所应乘的因子\*/

digit=digit+(\*(pstr+i-1-k)-48)\*e10; /\*将该位数的数值累加于digit\*/

k++; /\*位数K自增\*/

}

\*pa=digit; /\*将数值赋予数组a\*/

ndigit++;

j=0;

}

printf("There are %d numbers in this line, they are:\n",ndigit);

j=0;

pa=&a[0];

for (j=0;j<ndigit;j++) /\*打印数据\*/

printf("%d ",\*(pa+j));

printf("\n");

return 0;

}

8-17

#include<stdio.h>

int main()

{int strcmp(char \*p1,char \*p2);

int m;

char str1[20],str2[20],\*p1,\*p2;

printf("input two strings:\n");

scanf("%s",str1);

scanf("%s",str2);

p1=&str1[0];

p2=&str2[0];

m=strcmp(p1,p2);

printf("result:%d,\n",m);

return 0;

}

int strcmp(char \*p1,char \*p2) //两个字符串比较函数

{int i;

i=0;

while(\*(p1+i)==\*(p2+i))

if (\*(p1+i++)=='\0') return(0); //相等时返回结果0

return(\*(p1+i)-\*(p2+i)); //不等时返回结果为第一个不等字符ASCII码的差值

}

8-18

#include <stdio.h>

int main()

{char \*month\_name[13]={"illegal month","January","February","March","April",

"May","June","july","August","September","October", "November","December"};

int n;

printf("input month:\n");

scanf("%d",&n);

if ((n<=12) && (n>=1))

printf("It is %s.\n",\*(month\_name+n));

else

printf("It is wrong.\n");

return 0;

}

8-19-1

#include <stdio.h>

#define NEWSIZE 1000 //指定开辟存区的最大容量

char newbuf[NEWSIZE]; //定义字符数组newbuf

char \*newp=newbuf; //定义指针变量newp，指向可存区的始端

char \*new(int n) //定义开辟存区的函数new,开辟存储区后返回指针

{if (newp+n<=newbuf+NEWSIZE) // 开辟区未超过newbuf数组的大小

{newp+=n; // newp指向存储区的末尾

return(newp-n); // 返回一个指针,它指向存区的开始位置

}

else

return(NULL); // 当存区不够分配时,返回一个空指针

}

8-19-2

#include <stdio.h>

#define NEWSIZE 1000

char newbuf[NEWSIZE];

char \*newp=newbuf;

void free(char \*p) //释放存区函数

{if (p>=newbuf && p< newbuf + NEWSIZE)

newp=p;

}

8-20

#define LINEMAX 20 /\*定义字符串的最大长度\*/

int main()

{int i;

char \*\*p,\*pstr[5],str[5][LINEMAX];

for (i=0;i<5;i++)

pstr[i]=str[i]; /\*将第i个字符串的首地址赋予指针数组 pstr 的第i个元素\*/

printf("input 5 strings:\n");

for (i=0;i<5;i++)

scanf("%s",pstr[i]);

p=pstr;

sort(p);

printf("strings sorted:\n");

for (i=0;i<5;i++)

printf("%s\n",pstr[i]);

}

sort(char \*\*p) /\*冒泡法对5个字符串排序函数\*/

{int i,j;

char \*temp;

for (i=0;i<5;i++)

{for (j=i+1;j<5;j++)

{if (strcmp(\*(p+i),\*(p+j))>0) /\*比较后交换字符串地址\*/

{temp=\*(p+i);

\*(p+i)=\*(p+j);

\*(p+j)=temp;

}

}

}

return 0;

}

8-21

#include<stdio.h>

int main()

{void sort(int \*\*p,int n);

int i,n,data[20],\*\*p,\*pstr[20];

printf("input n:\n");

scanf("%d",&n);

for (i=0;i<n;i++)

pstr[i]=&data[i]; //将第i个整数的地址赋予指针数组 pstr 的第i个元素

printf("input %d integer numbers:",n);

for (i=0;i<n;i++)

scanf("%d",pstr[i]);

p=pstr;

sort(p,n);

printf("Now,the sequence is:\n");

for (i=0;i<n;i++)

printf("%d ",\*pstr[i]);

printf("\n");

return 0;

}

void sort(int \*\*p,int n)

{int i,j,\*temp;

for (i=0;i<n-1;i++)

{for (j=i+1;j<n;j++)

{if (\*\*(p+i)>\*\*(p+j)) //比较后交换整数地址

{temp=\*(p+i);

\*(p+i)=\*(p+j);

\*(p+j)=temp;

}

}

}

}

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习题330

9-1-1

#include <stdio.h>

struct

{ int year;

int month;

int day;

}date;

int main()

{int days;

printf("input year,month,day:");

scanf("%d,%d,%d",&date. year,&date.month,&date.day);

switch(date.month)

{ case 1: days=date.day; break;

case 2: days=date.day+31; break;

case 3: days=date.day+59; break;

case 4: days=date.day+90; break;

case 5: days=date.day+120; break;

case 6: days=date.day+151; break;

case 7: days=date.day+181; break;

case 8: days=date.day+212; break;

case 9: days=date.day+243; break;

case 10: days=date.day+273; break;

case 11: days=date.day+304; break;

case 12: days=date.day+334; break;

}

if ((date.year %4== 0 && date.year % 100 != 0

||date.year % 400 == 0) && date.month >=3) days+=1;

printf("%d/%d is the %dth day in %d.\n",date.month,date.day,days,date.year);

return 0;

}

9-1-2

#include <stdio.h>

struct

{ int year;

int month;

int day;

}date;

int main()

{int i,days;

int day\_tab[13]={0,31,28,31,30,31,30,31,31,30,31,30,31};

printf("input year,month,day:");

scanf("%d,%d,%d",&date. year,&date.month,&date.day);

days=0;

for(i=1;i<date.month;i++)

days=days+day\_tab[i];

days=days+date.day;

if((date.year%4==0 && date.year%100!=0 || date.year%400==0) && date.month>=3)

days=days+1;

printf("%d/%d is the %dth day in %d.\n",date.month,date.day,days,date.year);

return 0;

}

9-2-1

#include <stdio.h>

struct y\_m\_d

{ int year;

int month;

int day;

}date;

int main()

{ int days(struct y\_m\_d date1);

printf("input year,month,day:");

scanf("%d,%d,%d",&date.year,&date.month,&date.day);

printf("%d/%d is the %dth day in %d.\n",date.month,date.day,days(date),date.year);

}

int days(struct y\_m\_d date1)

{int sum;

switch(date1.month)

{case 1: sum=date1.day; break;

case 2: sum=date1.day+31; break;

case 3: sum=date1.day+59; break;

case 4: sum=date1.day+90; break;

case 5: sum=date1.day+120; break;

case 6: sum=date1.day+151; break;

case 7: sum=date1.day+181; break;

case 8: sum=date1.day+212; break;

case 9: sum=date1.day+243; break;

case 10: sum=date1.day+273; break;

case 11: sum=date1.day+304; break;

case 12: sum=date1.day+334; break;

}

if ((date1.year % 4 == 0 && date1.year % 100!=0|| date1.year % 400 == 0) && date1.month >=3)

sum+=1;

return(sum);

}

9-2-2

#include <stdio.h>

struct y\_m\_d

{int year;

int month;

int day;

} date;

int main()

{ int days(int year,int month,int day);

int days(int,int,int);

int day\_sum;

printf("input year,month,day:");

scanf("%d,%d,%d",&date. year,&date.month,&date.day);

day\_sum=days(date.year,date.month,date.day);

printf("%d / %d is the %dth day in %d.\n",date.month,date.day,day\_sum,date.year);

}

int days(int year,int month,int day)

{int day\_sum,i;

int day\_tab[13]={0,31,28,31,30,31,30,31,31,30,31,30,31};

day\_sum=0;

for (i=1;i<month;i++)

day\_sum+=day\_tab[i];

day\_sum+=day;

if ((year%4==0 && year%100!=0 || year%4==0) && month>=3)

day\_sum+=1;

return(day\_sum);

}

9-3

#include <stdio.h>

#define N 5

struct student

{ char num[6];

char name[8];

int score[4];

}stu[N];

int main()

{void print(struct student stu[6]);

int i,j;

for (i=0;i<N;i++)

{printf("\ninput score of student %d:\n",i+1);

printf("NO.: ");

scanf("%s",stu[i].num);

printf("name: ");

scanf("%s",stu[i].name);

for (j=0;j<3;j++)

{printf("score %d:",j+1);

scanf("%d",&stu[i].score[j]);

}

printf("\n");

}

print(stu);

return 0;

}

void print(struct student stu[6])

{int i,j;

printf("\n NO. name score1 score2 score3\n");

for (i=0;i<N;i++)

{printf("%5s%10s",stu[i].num,stu[i].name);

for (j=0;j<3;j++)

printf("%9d",stu[i].score[j]);

printf("\n");

}

}

9-4

#include <stdio.h>

#define N 5

struct student

{char num[6];

char name[8];

int score[4];

} stu[N];

int main()

{void input(struct student stu[]);

void print(struct student stu[]);

input(stu);

print(stu);

return 0;

}

void input(struct student stu[])

{int i,j;

for (i=0;i<N;i++)

{printf("input scores of student %d:\n",i+1);

printf("NO.: ");

scanf("%s",stu[i].num);

printf("name: ");

scanf("%s",stu[i].name);

for (j=0;j<3;j++)

{printf("score %d:",j+1);

scanf("%d",&stu[i].score[j]);

}

printf("\n");

}

}

void print(struct student stu[6])

{int i,j;

printf("\n NO. name score1 score2 score3

\n");

for (i=0;i<N;i++)

{printf("%5s%10s",stu[i].num,stu[i].name);

for (j=0;j<3;j++)

printf("%9d",stu[i].score[j]);

printf("\n");

}

9-5

#include <stdio.h>

#define N 10

struct student

{ char num[6];

char name[8];

float score[3];

float avr;

} stu[N];

int main()

{ int i,j,maxi;

float sum,max,average;

for (i=0;i<N;i++)

{printf("input scores of student %d:\n",i+1);

printf("NO.:");

scanf("%s",stu[i].num);

printf("name:");

scanf("%s",stu[i].name);

for (j=0;j<3;j++)

{printf("score %d:",j+1);

scanf("%f",&stu[i].score[j]);

}

}

average=0;

max=0;

maxi=0;

for (i=0;i<N;i++)

{sum=0;

for (j=0;j<3;j++)

sum+=stu[i].score[j];

stu[i].avr=sum/3.0;

average+=stu[i].avr;

if (sum>max)

{max=sum;

maxi=i;

}

}

average/=N;

printf(" NO. name score1 score2 score3 average\n");

for (i=0;i<N;i++)

{printf("%5s%10s",stu[i].num,stu[i].name);

for (j=0;j<3;j++)

printf("%9.2f",stu[i].score[j]);

printf(" %8.2f\n",stu[i].avr);

}

printf("average=%5.2f\n",average);

printf("The highest score is : student %s,%s\n",stu[maxi].num,stu[maxi].name);

printf("his scores are:%6.2f,%6.2f,%6.2f,average:%5.2f.\n",

stu[maxi].score[0],stu[maxi].score[1],stu[maxi].score[2],stu[maxi].avr);

return 0;

}

9-6

#include <stdio.h>

#define N 13

struct person

{int number;

int nextp;

} link[N+1];

int main()

{int i,count,h;

for (i=1;i<=N;i++)

{if (i==N)

link[i].nextp=1;

else

link[i].nextp=i+1;

link[i].number=i;

}

printf("\n");

count=0;

h=N;

printf("sequence that persons leave the circle:\n");

while(count<N-1)

{i=0;

while(i!=3)

{h=link[h].nextp;

if (link[h].number)

i++;

}

printf("%4d",link[h].number);

link[h].number=0;

count++;

}

printf("\nThe last one is ");

for (i=1;i<=N;i++)

if (link[i].number)

printf("%3d",link[i].number);

printf("\n");

return 0;

}

9-7

#include <stdio.h>

struct student

{long num;

float score;

struct student \*next;

};

int n;

struct student \*del(struct student \*head,long num)

{struct student \*p1,\*p2;

if (head==NULL) // 是空表

{printf("\nlist null!\n");

return(head);

}

p1=head; //使p1指向第一个结点

while(num!=p1->num && p1->next!=NULL) //p1指向的不是所要找的结点且后面还有结点 \*/

{p2=p1;p1=p1->next;} // p1后移一个结点

if(num==p1->num) // 找到了

{if(p1==head)head=p1->next; //若p1指向的是首结点,把第二个结点地址赋予head \*/

else p2->next=p1->next; // 否则将下一结点地址赋给前一结点地址

printf("delete:%ld\n",num);

n=n-1;

}

else printf("%ld not been found!\n",num); //找不到该结点

return(head);

}

9-8

#include <stdio.h>

struct student

{long num;

float score;

struct student\*next;

};

int n;

struct student \*insert(struct student \*head,struct student \*stud)

{struct student \*p0,\*p1,\*p2;

p1=head; //使ｐ１指向第一个结点

p0=stud; //指向要插入的结点

if(head==NULL) //原来的链表是空表

{head=p0;p0->next=NULL;} //使ｐ０指向的结点作为头结点

else

{while((p0->num>p1->num) && (p1->next!=NULL))

{p2=p1; //使ｐ２指向刚才p１指向的结点

p1=p1->next;

} //p1后移一个结点

if(p0->num<=p1->num)

{if(head==p1) head=p0; //插到原来第一个结点之前

else p2->next=p0; //插到p2指向的结点之后

p0->next=p1;

}

else

{p1->next=p0;

p0->next=NULL; //插到最后的结点之后

}

}

n=n+1; //结点数加１

return (head);

}

9-9-1

#include <stdio.h>

#include <malloc.h>

#define LEN sizeof(struct student)

struct student

{long num;

float score;

struct student \*next;

};

int n;

int main()

{struct student \*creat();

struct student \*del(struct student \* ,long);

struct student \*insert(struct student \*, struct student \*);

void print(struct student \*);

struct student \*head,stu;

long del\_num;

printf("input records:\n");

head=creat();

print(head);

printf("input the deleted number:");

scanf("%ld",&del\_num);

head=del(head,del\_num);

print(head);

printf("input the inserted record:");

scanf("%ld,%f",&stu.num,&stu.score);

head=insert(head,&stu);

print(head);

return 0;

}

struct student \*creat()

{struct student \*head;

struct student \*p1,\*p2;

n=0;

p1=p2=( struct student\*) malloc(LEN);

scanf("%ld,%f",&p1->num,&p1->score);

head=NULL;

while(p1->num!=0)

{n=n+1;

if(n==1)head=p1;

else p2->next=p1;

p2=p1;

p1=(struct student\*)malloc(LEN);

scanf("%ld,%f",&p1->num,&p1->score);

}

p2->next=NULL;

return(head);

}

struct student \*del(struct student \*head,long num)

{struct student \*p1,\*p2;

if (head==NULL)

{printf("\nlist null!\n");

return(head);

}

p1=head;

while(num!=p1->num && p1->next!=NULL)

{p2=p1;p1=p1->next;}

if(num==p1->num)

{if(p1==head)head=p1->next;

else p2->next=p1->next;

printf("delete:%ld\n",num);

n=n-1;

}

else printf("%ld not been found!\n",num);

return(head);

}

struct student \*insert(struct student \*head, struct student \*stud)

{struct student \*p0,\*p1,\*p2;

p1=head;

p0=stud;

if(head==NULL)

{head=p0; p0->next=NULL;}

else

{while((p0->num>p1->num) && (p1->next!=NULL))

{p2=p1;

p1=p1->next;

}

if(p0->num<=p1->num)

{if(head==p1) head=p0;

else p2->next=p0;

p0->next=p1;

}

else

{p1->next=p0; p0->next=NULL;}

}

n=n+1;

return(head);

}

void print(struct student \*head)

{struct student \*p;

printf("\nNow,These %d records are:\n",n);

p=head;

if(head!=NULL)

do

{printf("%ld %5.1f\n",p->num,p->score);

p=p->next;

}while(p!=NULL);

}

9-9-2

#include <stdio.h>

#include <malloc.h>

#define NULL 0

#define LEN sizeof(struct student)

struct student

{long num;

float score; struct student \*next;

};

int n;

int main()

{struct student \*creat();

struct student \*del(struct student \* ,long );

struct student \*insert(struct student \*, struct student \*);

void print(struct student \*);

struct student \*head,stu;

long del\_num;

printf("input records:\n");

head=creat();

print(head);

printf("input the deleted number:");

scanf("%ld",&del\_num);

head=del(head,del\_num);

print(head);

printf("input the inserted record:");

scanf("%ld,%f",&stu.num,&stu.score);

head=insert(head,&stu);

print(head);

printf("input the inserted record:");

scanf("%ld,%f",&stu.num,&stu.score);

head=insert(head,&stu);

print(head);

return 0;

}

struct student \*creat()

{struct student \*head;

struct student \*p1,\*p2;

n=0;

p1=p2=( struct student\*) malloc(LEN);

scanf("%ld,%f",&p1->num,&p1->score);

head=NULL;

while(p1->num!=0)

{n=n+1;

if(n==1)head=p1;

else p2->next=p1;

p2=p1;

p1=(struct student\*)malloc(LEN);

scanf("%ld,%f",&p1->num,&p1->score);

}

p2->next=NULL;

return(head);

}

struct student \*del(struct student \*head,long num)

{struct student \*p1,\*p2;

if (head==NULL)

{printf("\nlist null!\n");

return(head);

}

p1=head;

while(num!=p1->num && p1->next!=NULL)

{p2=p1;p1=p1->next;}

if(num==p1->num)

{if(p1==head)head=p1->next;

else p2->next=p1->next;

printf("delete:%ld\n",num);

n=n-1;

}

else printf("%ld not been found!\n",num);

return(head);

}

struct student \*insert(struct student \*head, struct student \*stud)

{struct student \*p0,\*p1,\*p2;

p1=head;

p0=stud;

if(head==NULL)

{head=p0; p0->next=NULL;}

else

{while((p0->num>p1->num) && (p1->next!=NULL))

{p2=p1;

p1=p1->next;

}

if(p0->num<=p1->num)

{if(head==p1) head=p0;

else p2->next=p0;

p0->next=p1;

}

else

{p1->next=p0; p0->next=NULL;}

}

n=n+1;

return(head);

}

void print(struct student \*head)

{struct student \*p;

printf("\nNow,These %d records are:\n",n);

p=head;

if(head!=NULL)

do

{printf("%ld %5.1f\n",p->num,p->score);

p=p->next;

}while(p!=NULL);

}

9-9-3

#include <stdio.h>

#include <malloc.h>

#define LEN sizeof(struct student)

struct student

{long num;

float score;

struct student \*next;

};

int n;

int main()

{struct student \*creat();

void print(struct student \*);

struct student \*del(struct student \*,long);

struct student \*insert(struct student \*, struct student \*);

struct student \*head,\*stu;

long del\_num;

printf("input records:\n");

head=creat();

print (head);

printf("input the deleted number:");

scanf("%ld",&del\_num);

while (del\_num!=0)

{head=del(head,del\_num);

print (head);

printf ("input the deleted number:");

scanf("%ld",&del\_num);}

printf("\ninput the inserted record:");

stu=(struct student \*) malloc(LEN);

scanf("%ld,%f",&stu->num,&stu->score);

while(stu->num!=0)

{head=insert(head,stu);

print(head);

printf("input the inserted record:");

stu=(struct student \*)malloc(LEN);

scanf("%ld,%f",&stu->num,&stu->score);

}

return 0;

}

struct student \*creat()

{struct student \*head;

struct student \*p1,\*p2;

n=0;

p1=p2=( struct student\*) malloc(LEN);

scanf("%ld,%f",&p1->num,&p1->score);

head=NULL;

while(p1->num!=0)

{n=n+1;

if(n==1)head=p1;

else p2->next=p1;

p2=p1;

p1=(struct student\*)malloc(LEN);

scanf("%ld,%f",&p1->num,&p1->score);

}

p2->next=NULL;

return(head);

}

struct student \*del(struct student \*head,long num)

{struct student \*p1,\*p2;

if (head==NULL)

{printf("\nlist null!\n");return(head);}

p1=head;

while(num!=p1->num && p1->next!=NULL)

{p2=p1;p1=p1->next;}

if(num==p1->num)

{if(p1==head)head=p1->next;

else p2->next=p1->next;

printf("delete:%ld\n",num);

n=n-1;

}

else printf("%ld not been found!\n",num);

return(head);

}

struct student \*insert(struct student \*head, struct student \*stud)

{struct student \*p0,\*p1,\*p2;

p1=head;

p0=stud;

if(head==NULL)

{head=p0; p0->next=NULL;}

else

{while((p0->num>p1->num) && (p1->next!=NULL))

{p2=p1;

p1=p1->next;

}

if(p0->num<=p1->num)

{if(head==p1) head=p0;

else p2->next=p0;

p0->next=p1;}

else

{p1->next=p0; p0->next=NULL;}

}

n=n+1;

return(head);

}

void print(struct student \*head)

{struct student \*p;

printf("\nNow,These %d records are:\n",n);

p=head;

if(head!=NULL)

do

{printf("%ld %5.1f\n",p->num,p->score);

p=p->next;

}while(p!=NULL);

}

9-10

#include <stdio.h>

#include <malloc.h>

#define LEN sizeof(struct student)

struct student

{long num;

int score;

struct student \*next;

};

struct student lista,listb;

int n,sum=0;

int main()

{struct student \*creat(void);

struct student \*insert(struct student \*,struct student \*);

void print(struct student \*);

struct student \*ahead,\*bhead,\*abh;

printf("input list a:\n");

ahead=creat();

sum=sum+n;

printf("input list b:\n");

bhead=creat();

sum=sum+n;

abh=insert(ahead,bhead);

print(abh);

return 0;

}

struct student \*creat(void) //建立链表函数

{struct student \*p1,\*p2,\*head;

n=0;

p1=p2=(struct student \*)malloc(LEN);

printf("input number & scores of student:\n");

printf("if number is 0,stop inputing.\n");

scanf("%ld,%d",&p1->num,&p1->score);

head=NULL;

while(p1->num !=0)

{n=n+1;

if (n==1)

head=p1;

else

p2->next=p1;

p2=p1;

p1=(struct student \*)malloc(LEN);

scanf("%ld,%d",&p1->num,&p1->score);

}

p2->next=NULL;

return(head);

}

struct student \*insert(struct student \*ah,struct student \*bh) //插入函数

{struct student \* pa1,\* pa2,\* pb1,\* pb2;

pa2=pa1=ah;

pb2=pb1=bh;

do

{while((pb1->num>pa1->num) && (pa1->next !=NULL))

{pa2=pa1;

pa1=pa1->next;

}

if (pb1->num <= pa1->num)

{if (ah==pa1)

ah=pb1;

else

pa2->next=pb1;

pb1=pb1->next;

pb2->next=pa1;

pa2=pb2;

pb2=pb1;

}

}while ((pa1->next!=NULL) || (pa1==NULL && pb1!=NULL));

if ((pb1!=NULL) && (pb1->num>pa1->num) && (pa1->next==NULL))

pa1->next=pb1;

return(ah);

}

void print(struct student \*head) //输出函数

{struct student \*p;

printf("There are %d records: \n",sum);

p=head;

if (p !=NULL)

do

{printf("%ld %d\n",p->num,p->score);

p=p->next;

}while (p !=NULL);

}

9-11

#include <stdio.h>

#include <string.h>

#define LA 4

#define LB 5

struct student

{int num;

char name[8];

struct student \*next;

} a[LA],b[LB];

int main()

{struct student a[LA]={{101,"Wang"},{102,"Li"},{105,"Zhang"},{106,"Wei"}};

struct student b[LB]={{103,"Zhang"},{104,"Ma"},{105,"Chen"},{107,"Guo"},{108,"lui"}};

int i;

struct student \*p,\*p1,\*p2,\*head1,\*head2;

head1=a;

head2=b;

printf(" list A: \n");

for (p1=head1,i=1;i<=LA;i++)

{if(i<LA) p1->next=a+i;

else p1->next=NULL;

printf("%4d%8s\n",p1->num,p1->name);

if(i<LA) p1=p1->next;

}

printf("\n list B:\n");

for (p2=head2,i=1;i<=LB;i++)

{if (i<LB) p2->next=b+i;

else p2->next=NULL;

printf("%4d%8s\n",p2->num,p2->name);

if (i<LB) p2=p2->next;

}

p1=head1;

while(p1!=NULL)

{p2=head2;

while ((p1->num != p2->num) && (p2->next!=NULL))

p2=p2->next;

if (p1->num == p2->num)

{if (p1==head1)

head1=p1->next;

else

{p->next=p1->next;p1=p1->next;}

}

else

{p=p1;p1=p1->next;}

}

printf("\nresult:\n");

p1=head1;

while(p1!=NULL)

{printf("%4d %7s \n",p1->num,p1->name);

p1=p1->next;

}

return 0;

}

9-12

#include <stdio.h>

#include <malloc.h>

#define LEN sizeof(struct student)

struct student

{ char num[6];

char name[8];

char sex[2];

int age;

struct student \*next;

} stu[10];

int main()

{ struct student \*p,\*pt,\*head;

int i,length,iage,flag=1;

int find=0; //找到待删除元素 find=1,否则find=0

while (flag==1)

{printf("input length of list(<10):");

scanf("%d",&length);

if (length<10)

flag=0;

}

//建立链表

for (i=0;i<length;i++)

{p=(struct student \*) malloc(LEN);

if (i==0)

head=pt=p;

else

pt->next=p;

pt=p;

printf("NO.:");

scanf("%s",p->num);

printf("name:");

scanf("%s",p->name);

printf("sex:");

scanf("%s",p->sex);

printf("age:");

scanf("%d",&p->age);

}

p->next=NULL;

p=head;

printf("\n NO. name sex age\n"); //显示

while(p!=NULL)

{printf("%4s%8s%6s%6d\n",p->num,p->name,p->sex,p->age);

p=p->next;

}

// 删除

printf("input age:"); //输入待删年龄

scanf("%d",&iage);

pt=head;

p=pt;

if (pt->age==iage) //链头是待删元素

{p=pt->next;

head=pt=p;

find=1;

}

else //链头不是待删元素

pt=pt->next;

while (pt!=NULL)

{if (pt->age==iage)

{p->next=pt->next;

find=1;

}

else // 中间结点不是待删元素

p=pt;

pt=pt->next;

}

if (!find)

printf(" not found %d.",iage);

p=head;

printf("\n NO. name sex age\n"); //显示结果

while (p!=NULL)

{printf("%4s%8s",p->num,p->name);

printf("%6s%6d\n",p->sex,p->age);

p=p->next;

}

return 0;

}

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10-3

#include <stdio.h>

#include <string.h>

#include <stdlib.h>

int main ()

{

FILE \*fp;

char str[100];

int i=0;

if ((fp=fopen("a1","w"))==NULL)

{ printf("can not open file\n");

exit(0);

}

printf("input a string:\n");

gets(str);

while (str[i]!='!')

{if (str[i]>='a'&& str[i]<='z')

str[i]=str[i]-32;

fputc(str[i],fp);

i++;

}

fclose(fp);

fp=fopen("a1","r");

fgets(str,strlen(str)+1,fp);

printf("%s\n",str);

fclose(fp);

return 0;

}

10-4

#include <stdio.h>

#include <stdlib.h>

int main ()

{

FILE \*fp;

int i,j,n,i1;

char c[100],t,ch;

if ((fp=fopen("a1","r"))==NULL)

{ printf("\ncan not open file\n");

exit(0);

}

printf("file A :\n");

for (i=0;(ch=fgetc(fp))!=EOF;i++)

{

c[i]=ch;

putchar(c[i]);

}

fclose(fp);

i1=i;

if ((fp=fopen("b1","r"))==NULL)

{printf("\ncan not open file\n");

exit(0);

}

printf("\nfile B:\n");

for (i=i1;(ch=fgetc(fp))!=EOF;i++)

{c[i]=ch;

putchar(c[i]);

}

fclose(fp);

n=i;

for (i=0;i<n;i++)

for (j=i+1;j<n;j++)

if (c[i]>c[j])

{t=c[i];

c[i]=c[j];

c[j]=t;

}

printf("\nfile C :\n");

fp=fopen("c1","w");

for (i=0;i<n;i++)

{putc(c[i],fp);

putchar(c[i]);

}

printf("\n");

fclose(fp);

return 0;

}

10-5-1

#include <stdio.h>

struct student

{char num[10];

char name[8];

int score[3];

float ave;

} stu[5];

int main()

{ int i,j,sum;

FILE \*fp;

for(i=0;i<5;i++)

{printf("\ninput score of student %d:\n",i+1);

printf("NO.:");

scanf("%s",stu[i].num);

printf("name:");

scanf("%s",stu[i].name);

sum=0;

for (j=0;j<3;j++)

{printf("score %d:",j+1);

scanf("%d",&stu[i].score[j]);

sum+=stu[i].score[j];

}

stu[i].ave=sum/3.0;

}

/\*将数据写入文件\*/

fp=fopen("stud","w");

for (i=0;i<5;i++)

if (fwrite(&stu[i],sizeof(struct student),1,fp)!=1)

printf("file write error\n");

fclose(fp);

fp=fopen("stud","r");

for (i=0;i<5;i++)

{fread(&stu[i],sizeof(struct student),1,fp);

printf("\n%s,%s,%d,%d,%d,%6.2f\n",stu[i].num,stu[i].name,stu[i].score[0],

stu[i].score[1],stu[i].score[2],stu[i].ave);}

return 0;

}

10-5-2

#include <stdio.h>

#define SIZE 5

struct student

{char name[10];

int num;

int score[3];

float ave;

} stud[SIZE];

int main()

{ void save(void);

int i;

float sum[SIZE];

FILE \*fp1;

for (i=0;i<SIZE;i++)

{ scanf("%s %d %d %d %d",stud[i].name,&stud[i].num,&stud[i].score[0],

&stud[i].score[1],&stud[i].score[2]);

sum[i]=stud[i].score[0]+stud[i].score[1]+stud[i].score[2];

stud[i].ave=sum[i]/3;

}

save();

fp1=fopen("stu.dat","rb");

printf("\n name NO. score1 score2 score3 ave\n");

printf("-----------------------------------------------\n");

for (i=0;i<SIZE;i++)

{fread(&stud[i],sizeof(struct student),1,fp1);

printf("%-10s %3d %7d %7d %7d %8.2f\n",stud[i].name,stud[i].num,

stud[i].score[0],stud[i].score[1],stud[i].score[2],stud[i].ave);

}

fclose (fp1);

return 0;

}

void save(void)

{

FILE \*fp;

int i;

if ((fp=fopen("stu.dat","wb"))==NULL)

{printf("The file can not open\n");

return;

}

for(i=0;i<SIZE;i++)

if (fwrite(&stud[i],sizeof(struct student),1,fp)!=1)

{printf("file write error\n");

return;

}

fclose(fp);

}

10-6-1

#include <stdio.h>

#include <stdlib.h>

#define N 10

struct student

{char num[10];

char name[8];

int score[3];

float ave;

} st[N],temp;

int main()

{FILE \*fp;

int i,j,n;

/\*读文件\*/

if ((fp=fopen("stud","r"))==NULL)

{printf("can not open.\n");

exit(0);

}

printf("File 'stud': ");

for (i=0;fread(&st[i],sizeof(struct student),1,fp)!=0;i++)

{printf("\n%8s%8s",st[i].num,st[i].name);

for (j=0;j<3;j++)

printf("%8d",st[i].score[j]);

printf("%10.2f",st[i].ave);

}

printf("\n");

fclose(fp);

n=i;

/\*排序\*/

for (i=0;i<n;i++)

for (j=i+1;j<n;j++)

if (st[i].ave < st[j].ave)

{temp=st[i];

st[i]=st[j];

st[j]=temp;

}

/\*输出\*/

printf("\nNow:");

fp=fopen("stu\_sort","w");

for (i=0;i<n;i++)

{fwrite(&st[i],sizeof(struct student),1,fp);

printf("\n%8s%8s",st[i].num,st[i].name);

for (j=0;j<3;j++)

printf ("%8d",st[i].score[j]);

printf("%10.2f",st[i].ave);

}

printf("\n");

fclose(fp);

return 0;

}

10-6-2

#include <stdio.h>

#include <stdlib.h>

#define SIZE 5

struct student

{

char name[10];

int num;

int score[3];

float ave;

} stud[SIZE],work;

int main()

{

void sort(void);

int i;

FILE \*fp;

sort();

fp=fopen("stud\_sort.dat","rb");

printf("sorted student's scores list as follow\n");

printf("----------------------------------------------------\n");

printf(" NAME N0. SCORE1 SCORE2 SCORE3 AVE \n");

printf("----------------------------------------------------\n");

for (i=0;i<SIZE;i++)

{

fread(&stud[i],sizeof(struct student),1,fp);

printf("%-10s %3d %8d %8d %8d %9.2f\n",stud[i].name,stud[i].num,

stud[i].score[0],stud[i].score[1],stud[i].score[2],stud[i].ave);

}

fclose(fp);

return 0;

}

void sort(void)

{FILE \*fp1,\*fp2;

int i,j;

if ((fp1=fopen("stu.dat","rb"))==NULL)

{printf("The file can not open\n\n");

exit(0);

}

if ((fp2=fopen("stud\_sort.dat","wb"))==NULL)

{printf("The file write error\n");

exit(0);

}

for (i=0;i<SIZE;i++)

if (fread(&stud[i],sizeof(struct student),1,fp1)!=1)

{printf("file read error\n");

exit(0);

}

for (i=0;i<SIZE;i++)

{for (j=i+1;j<SIZE;j++)

if (stud[i].ave<stud[j].ave)

{work=stud[i];

stud[i]=stud[j];

stud[j]=work;

}

fwrite(&stud[i],sizeof(struct student),1,fp2);

}

fclose(fp1);

fclose(fp2);

}

10-7

#include <stdio.h>

#include <stdlib.h>

struct student

{char num[10];

char name[8];

int score[3];

float ave;

} st[10],s;

int main()

{FILE \*fp,\*fp1;

int i,j,t,n;

printf("\nNO.:");

scanf("%s",s.num);

printf("name:");

scanf("%s",s.name);

printf("score1,score2,score3:");

scanf("%d,%d,%d",&s.score[0],&s.score[1],&s.score[2]);

s.ave=(s.score[0]+s.score[1]+s.score[2])/3.0;

/\*从文件读数据\*/

if((fp=fopen("stu\_sort","r"))==NULL)

{printf("can not open file.");

exit(0);

}

printf("original data:\n");

for (i=0;fread(&st[i],sizeof(struct student),1,fp)!=0;i++)

{printf("\n%8s%8s",st[i].num,st[i].name);

for (j=0;j<3;j++)

printf("%8d",st[i].score[j]);

printf("%10.2f",st[i].ave);

}

n=i;

for (t=0;st[t].ave>s.ave && t<n;t++);

/\*向文件写数据\*/

printf("\nNow:\n");

fp1=fopen("sort1.dat","w");

for (i=0;i<t;i++)

{fwrite(&st[i],sizeof(struct student),1,fp1);

printf("\n %8s%8s",st[i].num,st[i].name);

for (j=0;j<3;j++)

printf("%8d",st[i].score[j]);

printf("%10.2f",st[i].ave);

}

fwrite(&s,sizeof(struct student),1,fp1);

printf("\n %8s %7s %7d %7d %7d%10.2f",s.num,s.name,s.score[0],

s.score[1],s.score[2],s.ave);

for (i=t;i<n;i++)

{fwrite(&st[i],sizeof(struct student),1,fp1);

printf("\n %8s%8s",st[i].num,st[i].name);

for(j=0;j<3;j++)

printf("%8d",st[i].score[j]);

printf("%10.2f",st[i].ave);

}

printf("\n");

fclose(fp);

fclose(fp1);

return 0;

}

10-8

#include <stdio.h>

#include <stdlib.h>

struct student

{char num[10];

char name[8];

int score[3];

float ave;

} st[10],s;

int main()

{FILE \*fp,\*fp1;

int i,j,t,n;

printf("\nNO.:");

scanf("%s",s.num);

printf("name:");

scanf("%s",s.name);

printf("score1,score2,score3:");

scanf("%d,%d,%d",&s.score[0],&s.score[1],&s.score[2]);

s.ave=(s.score[0]+s.score[1]+s.score[2])/3.0;

/\*从文件读数据\*/

if((fp=fopen("stu\_sort","r"))==NULL)

{printf("can not open file.");

exit(0);

}

printf("original data:\n");

for (i=0;fread(&st[i],sizeof(struct student),1,fp)!=0;i++)

{printf("\n%8s%8s",st[i].num,st[i].name);

for (j=0;j<3;j++)

printf("%8d",st[i].score[j]);

printf("%10.2f",st[i].ave);

}

n=i;

for (t=0;st[t].ave>s.ave && t<n;t++);

/\*向文件写数据\*/

printf("\nNow:\n");

fp1=fopen("sort1.dat","w");

for (i=0;i<t;i++)

{fwrite(&st[i],sizeof(struct student),1,fp1);

printf("\n %8s%8s",st[i].num,st[i].name);

for (j=0;j<3;j++)

printf("%8d",st[i].score[j]);

printf("%10.2f",st[i].ave);

}

fwrite(&s,sizeof(struct student),1,fp1);

printf("\n %8s %7s %7d %7d %7d%10.2f",s.num,s.name,s.score[0],

s.score[1],s.score[2],s.ave);

for (i=t;i<n;i++)

{fwrite(&st[i],sizeof(struct student),1,fp1);

printf("\n %8s%8s",st[i].num,st[i].name);

for(j=0;j<3;j++)

printf("%8d",st[i].score[j]);

printf("%10.2f",st[i].ave);

}

printf("\n");

fclose(fp);

fclose(fp1);

return 0;

}

10-9

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

struct emploee

{char num[6];

char name[10];

char sex[2];

int age;

char addr[20];

int salary;

char health[8];

char class[10];

}em[10];

struct emp

{char name[10];

int salary;

}em\_case[10];

int main()

{FILE \*fp1,\*fp2;

int i,j;

if ((fp1=fopen("emploee","r"))==NULL)

{printf("can not open file.\n");

exit(0);

}

printf("\n NO. name sex age addr salary health class\n");

for (i=0;fread(&em[i],sizeof(struct emploee),1,fp1)!=0;i++)

{printf("\n%4s%8s%4s%6d%10s%6d%10s%8s",em[i].num,em[i].name,em[i].sex,

em[i].age,em[i].addr,em[i].salary,em[i].health,em[i].class);

strcpy(em\_case[i].name,em[i].name);

em\_case[i].salary=em[i].salary;

}

printf("\n\n \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* ");

if((fp2=fopen("emp\_salary","wb"))==NULL)

{printf("can not open file\n");

exit(0);

}

for (j=0;j<i;j++)

{if(fwrite(&em\_case[j],sizeof(struct emp),1,fp2)!=1)

printf("error!");

printf("\n %12s%10d",em\_case[j].name,em\_case[j].salary);

}

printf("\n \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* ");

fclose(fp1);

fclose(fp2);

return 0;

}

10-10

#include <stdio.h>

#include <stdlib.h>

#include <string.h>

struct emploee

{char name[10];

int salary;

}emp[20];

int main()

{ FILE \*fp;

int i,j,n,flag;

char name[10];

if ((fp=fopen("emp\_salary","rb"))==NULL)

{printf("can not open file.\n");

exit(0);

}

printf("\noriginal data:\n");

for (i=0;fread(&emp[i],sizeof(struct emploee),1,fp)!=0;i++)

printf("\n %8s %7d",emp[i].name,emp[i].salary);

fclose(fp);

n=i;

printf("\ninput name deleted:\n");

scanf("%s",name);

for (flag=1,i=0;flag && i<n;i++)

{if (strcmp(name,emp[i].name)==0)

{for (j=i;j<n-1;j++)

{strcpy(emp[j].name,emp[j+1].name);

emp[j].salary=emp[j+1].salary;

}

flag=0;

}

}

if(!flag)

n=n-1;

else

printf("\nnot found!");

printf("\nNow,The content of file:\n");

if((fp=fopen("emp\_salary","wb"))==NULL)

{printf("can not open file\n");

exit(0);

}

for (i=0;i<n;i++)

fwrite(&emp[i],sizeof(struct emploee),1,fp);

fclose(fp);

fp=fopen("emp\_salary","r");

for (i=0;fread(&emp[i],sizeof(struct emploee),1,fp)!=0;i++)

printf("\n%8s %7d",emp[i].name,emp[i].salary);

printf("\n");

fclose(fp);

return 0;

}

10-11

#include <stdio.h>

int main()

{ int i,flag;

char str[80],c;

FILE \*fp;

fp=fopen("text","w");

flag=1;

while(flag==1)

{printf("input string:\n");

gets(str);

fprintf(fp,"%s ",str);

printf("continue?");

c=getchar();

if ((c=='N')||(c=='n'))

flag=0;

getchar();

}

fclose(fp);

fp=fopen("text","r");

while(fscanf(fp,"%s",str)!=EOF)

{for (i=0;str[i]!='\0';i++)

if ((str[i]>='a') && (str[i]<='z'))

str[i]-=32;

printf("%s\n",str);

}

fclose(fp);

return 0;

}

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11-1

#include <stdio.h>

#define swap(a,b)t=b;b=a;a=t

int main()

{

int a,b,t;

printf("input two integer a,b:");

scanf("%d,%d",&a,&b);

swap(a,b);

printf("Now,a=%d,b=%d\n",a,b);

return 0;

}

11-2

#include <stdio.h>

#define SURPLUS(a,b)((a)%(b))

int main()

{

int a,b;

printf("input two integer a,b:");

scanf("%d,%d",&a,&b);

printf("remainder is %d\n",SURPLUS(a,b));

return 0;

}

11-4

#include<stdio.h>

#define LEAP\_YEAR(y)((y%4==0)&&(y%100!=0)||(y%400==0))

int main()

{

int year;

printf("\ninput year:");

scanf("%d",&year);

if(LEAP\_YEAR(year))

printf("%d is a leap year.\n",year);

else

printf("%d is not a leap year. \n",year);

return 0;

}

11-5

#include <stdio.h>

#define NL putchar('\n')

#define PR(format,value) printf("value=%format\t",(value))

#define PRINT1(f,x1) PR(f,x1);NL

#define PRINT2(f,x1,x2) PR(f,x1);PRINT1(f,x2)

int main()

{

float x=5.0,x1=3.0,x2=8.0;

char d='f';

PR(d,x);

PRINT1(d,x);

PRINT2(d,x1,x2);

return 0;

}

11-6

#include<stdio.h>

#define PR printf

#define NL "\n"

#define Fs "%f"

#define F "%6.2f"

#define F1 F NL

#define F2 F"\t" F NL

#define F3 F"\t" F "\t" F NL

int main()

{float a,b,c;

PR("input three floating number a,b,c:\n");

scanf(Fs,&a);

scanf(Fs,&b);

scanf(Fs,&c);

PR(NL);

PR("output one floating number each line:\n");

PR(F1,a);

PR(F1,b);

PR(F1,c);

PR(NL);

PR("output two floating number:\n");

PR(F2,a,b);

PR(F1,c);

PR(NL);

PR("output three floating number:\n");

PR(F3,a,b,c);

return 0;

}

11-7

#include <stdio.h>

#include "format.h"

int main ()

{

int d,num;

float f;

char s[80];

printf("choice data format: 1-integer,2-float,3-string:");

scanf("%d",&num);

switch(num)

{case 1: printf("input integer: ");

scanf("%d",&d);

INTEGER(d);

break;

case 2: printf("input float: ");

scanf("%f",&f);

FLOAT(f);

break;

case 3: printf("input string: ");

scanf("%s",&s);

STRING(s);

break;

default: printf("input error!\n");

}

return 0;

}

11-8-1

#include<stdio.h>

int main()

{int max(int x,int y,int z);

int a,b,c;

printf("input three integer: ");

scanf("%d,%d,%d",&a,&b,&c);

printf("max=%d\n",max(a,b,c));

return 0;

}

11-8-2

#include<stdio.h>

#define MAX(a,b)((a)>(b)?(a):(b))

int main()

{

int a,b,c;

printf("input three integer: ");

scanf("%d,%d,%d",&a,&b,&c);

printf("max=%d\n",MAX(MAX(a,b),c));

return 0;

}

11-10

#include <stdio.h>

#define MAX 80

#define CHANGE 1

int main()

{

char str[MAX];

int i;

printf("input text:\n");

gets(str);

#if(CHANGE)

{for(i=0;i<MAX;i++)

{if(str[i]!='\0')

if(str[i]>='a'&&str[i]<'z'||str[i]>='A'&&str[i]<='Z')

str[i]+=1;

else if(str[i]=='z'||str[i]=='Z')

str[i]-=25;

}

}

#endif

printf("output:\n%s\n",str);

return 0;

}

12-1

#include <stdio.h>

int main()

{unsigned a,b,c,d;

printf("please enter a:");

scanf("%o",&a);

b=a>>4;

c=~(~0<<4);

d=b & c;

printf("%o,%d\n%o,%d\n",a,a,d,d);

return 0;

}

12-2

#include <stdio.h>

int main()

{unsigned short a,b,c;

int n;

printf("please enter a & n:\n");

scanf("a=%o,n=%d",&a,&n);

b=a<<(16-n);

c=a>>n;

c=c|b;

printf("a:%o\nc:%o\n",a,c);

return 0;

}