**Printed RED:Tips or Attention.**

**Written BLUE:Test Data.**

**习题汇编实例1：PI的迭代**

#include<stdio.h>

int main()

{

long i,n;

double pi,di;

printf("请输入迭代次数：\n");

scanf("%ld",&n);

pi=2.0;

di=1.0;

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

{

pi\*=4\*di\*di/(2\*di-1)/(2\*di+1);

di+=1;

}

printf("经过%ld次迭代,PI的值为%.15f",n,pi);

}

**学习指导与实践范例4 进制转换**

#include<stdio.h>

#define MAXLEN 16

int main()

{

int inform,outform,c,i,next;

char digits[MAXLEN],a,b,ch;

next=0;

while((ch=getchar())<='9'&&ch>='0')

digits[next++]=ch;**//these 3 lines above: an efficient means of putting chars into digits**

a=getchar();

if(a<='9'&&a>='2')

inform=a-'0';

else

inform=10;**//from if to else:NOTE 1,equivalent to NOTE 2**

getchar();

b=getchar();

outform=(b<='9'&&b>='2'?(b-'0'):10);**//this line:NOTE 2,equivalent to NOTE 1**

for(c=i=0;i<=next-2;i++)

c=(c+digits[i]-'0')\*inform;

c=c+digits[i]-'0';

next=0;

do

digits[next++]=c%outform+'0';

while((c/=outform)>0);

for (i=next-1;i>=0;i--)

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

}

**学习指导与实践范例5 泳池最优解**

#include<stdio.h>

#include<math.h>

**/\*1：define the length and speed**

**2:run the distance circle by intervals of 0.1m,form 0.0 to 50 and calculate the time**

**3:output the shortest time(if exchange)\*/**

int main()

{

float walk=1.2,swim=0.8;

float s1,s2,x,tempx,tempy=100.0,y;

for(x=0.0;x<=50.0;)

{

s1=x;

s2=sqrt(625.0+(50.0-x)\*(50.0-x));

y=s1/walk+s2/swim;

**/\*Firstly I put these 2 lines above out of the circle,actually at line 10&11.If so,'y'will be defined to an accurate number already.\*/**

if(y<=tempy)

{

tempy=y;

tempx=x;

}

x=x+0.1;

}

printf("Pecfect x is:%f,samllest y=%f",tempx,tempy);

}

**// Newton 迭代法 和 二分法算法思路也有参考价值**

**学习指导与实践范例6 crime**

#include<stdio.h>

**/\*1:interpret each clue(false0 or treu1)**

**2:run a circle and judge clues**

**3:output criminal(s)\*/**

int judge(int x)

{

if(x==0)

printf("不是罪犯\n");

if(x==1)

printf("是罪犯\n");

}

int main()

{

int c1,c2,c3,c4,c5,c6;

int a,b,c,d,e,f;

for(a=0;a<=1;a++)

for(b=0;b<=1;b++)

for(c=0;c<=1;c++)

for(d=0;d<=1;d++)

for(e=0;e<=1;e++)

for(f=0;f<=1;f++)

{

c1=a||b;

c2=((a&&e)||(e&&f)||(f&&a));

**//attention.(a&&e&&f)is included.**

c3=!(a&&d);

c4=(b&&c)||(!b&&!c);

c5=((c&&!d)||(!c&&d));

c6=!(!d&&e);

if(c1&&c2&&c3&&c4&&c5&&c6)

{

printf("A:");judge(a);

printf("B:");judge(b);

printf("C:");judge(c);

printf("D:");judge(d);

printf("E:");judge(e);

printf("F:");judge(f);

}

}

}

**学习指导与实践习题1 最大公约数**

#include<stdio.h>

int main()

{

int a,b,m,n,r,temp,aa,bb;//ATTENTION:aa and bb are useful later

printf("Please input two numbers:");

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

aa=a;bb=b;

if(a<b)

{

temp=b;

b=a;

a=temp;

}

if(a==b)

m=a;

else

{

do{

r=a%b;

a=b;

b=r;

}while(r);

m=a;**//Take care.'m' should be given as 'a' rather than 'b'**

}

n=aa\*bb/m;**//ATTENTION here!a,b have been altered,so we need to use aa and bb.**

printf("The greatest common divisor of a and b is%d,the least common mutiple is%d",m,n);

}

**学习指导与实践习题3 字符输入统计**

#include<stdio.h>

#define MAXLEN 100

int main()

{

char index[MAXLEN],ch;

int next=0,i,ENG=0,VOI=0,EXC=0,ENT=0,OTH=0;

printf("请输入一段字符：\n");

while(ch=getchar()!=EOF)

index[next++]=ch;

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

{

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

ENG++;

else if(index[i]==' ')

VOI++;

else if(index[i]=='\t')

EXC++;

else if(index[i]=='\n')

ENT++;

else OTH++;

}

printf("英文字符有%d个\n空格有%d个\n制表符有%d个\n换行符有%d个\n其他字符有%d个\n",ENG,VOI,EXC,ENT,OTH);

}

**学习指导与实践习题4 sinx**

#include<stdio.h>

#include<math.h>

double fact(int n)**//定义n的阶乘**

{

if(n==0)

return 1;

return fact(n-1)\*n;

}

int main()

{

double x,sum=0,term=1;

int n=1,t=1;

printf("请输入x的值：\n");

scanf("%lf",&x);

while(term>=1e-5)

{

term=pow(x,2\*n-1)/fact(2\*n-1);

sum+=t\*term;

t=-t;

n++;

}

printf("sinx=%f",sum);

return 0;

}

**习题汇编34 六位数**

#include<stdio.h>

int main()

{

int i,j,k;

long int number;

for(i=10;i<=31;i++)

for(j=0;j<=31;j++)

{

number=1000\*i\*i+j\*j;

for(k=317;k<1000;k++)

if(k\*k==number)

{

printf("%8ld",number);

break;

}

}

}

**学习指导与实践习题7 NEWTON迭代**

#include<stdio.h>

#include<math.h>

int main()

{

double x=1.5,y,fx;

do{

y=2\*x\*x\*x-4\*x\*x+3\*x-6;

fx=6\*x\*x-8\*x+3;

x-=y/fx;

}while(fabs(y)>=1e-6);**//float:fabs;int:abs;attention 10^-6 ought to be 1e-6**

printf("x=%f",x);

}

**学习指导与实践习题9 素数和**

#include<stdio.h>

#define MAXLEN 500

**//掌握筛法求素数方法**

int main()

{

int index[MAXLEN],i,j;

int bingo[MAXLEN],next=0,sum=0;

for(i>=0;i<=MAXLEN;i++)

index[i]=1;

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

{

if(index[i])

{

bingo[next++]=i;

for(j=2\*i;j<=MAXLEN;j+=i)

index[j]=0;

}

}

if(next<11)

printf("The length can't ensure adding process");

else

{

for(i=next-1;i>=next-10;i--)

sum+=bingo[i];

}

printf("Sum=%d",sum);

}