**magnificent middle division technology big study**

**"Computer Fundamentals and Programming ( C++ )"**

**Reality test report tell**

**Experiment name : The sixth computer experiment Experimental hours: Class 16 : Information Management (Medical) 1601**

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**1. Purpose of the experiment**

* Learn how to create classes Learn to design constructors Master the definition of the copy constructor Understand the definition of composite classes

**2. Experimental content**

1 . Programming with Object-Oriented Programming: Calculate the area and perimeter of a triangle based on its three sides. ( **requires** In the main function, the value of each side length of the output triangle can be displayed separately according to the requirement. )

1 ) Code

# include <iostream>

# include < math.h >

using namespace std;

class tri

{

double a , b , c , p , l , s ; int judge ;

public:

void setlength ( double sa , double sb , double sc ) ;

double length () ; double area () ; double output ( int j );

} ;

void tri :: setlength ( double sa , double sb , double sc )

{ a = sa ; b = sb ; c = sc ; }

double tri :: length ()

{ l = a + b + c ; return l ; }

double tri :: area ()

{ p = ( a + b + c ) / 2 ; s = sqrt ( p \* ( p - a ) \* ( p - b ) \* ( p - c ) ) ; return s ; }

double tri :: output ( int j )

{

judge = j;

switch ( judge )

{ case 1 : return a ;

case 2 : return b ;

case 3 : return c ;}

}

int main()

{

tri shape;

int j ; double sa , sb , sc , len , area ;

do

{ cout << " Enter the length of the three sides of the triangle: \n" ; cin >> sa >> sb >> sc ; }

while ( sa + sb <= sc || sb + sc <= sa || sc + sa <= sb ) ;

shape.setlength ( sa , sb , sc ) ;

len = shape. length () ; area = shape. area () ;

cout << " perimeter of triangle: " << len << " area: " << area << endl ;

cout << " Please enter which edge you want to query: ";

cin >> j ;

cout << " The side length is: " << shape.output ( j ) << endl ;

return 0 ;

}

2 ) Algorithm description

1. Use special functions to assign values to data members; 2. Function members are defined outside the class; 3. There is no need to transfer values when calculating perimeter and area, so the brackets are empty

3 ) Errors and solutions

1. Unfamiliar with the assignment of data members; 2. Unfamiliar with the declaration and definition of function members

2 . Commodity management system is required to build a commodity category, the main program must be able to input the name, quantity, unit price, and total value of the commodity; it can display the name, quantity, unit price, and total value of the commodity. Please program to complete the above functions of a commodity. (The specific data are as follows: computers, 3 sets, 4000 yuan)

1 ) Code

# include <iostream>

# include <iomanip>

# include < math.h >

# include <cstring>

using namespace std;

class goods

{

char name[9] ;double price , gross ; int amount ;

public:

void input ( char n[9] , double p , int a , double g ) ;

void output () ;

} ;

void goods :: input ( char n[9] , double p , int a , double g )

{ strcpy ( name , n ) ; price = p ; amount = a ; gross = g ; }

void goods :: output ()

{ cout << name << ' ' << price << ' ' << amount << ' ' << gross << endl ; }

int main()

{

goods screen;

char n[9] ; double p , g ; int a ;

cout << " Enter the length of the three sides of the triangle: \n";

cin >> n >> p >> a >> g ;

screen.input ( n , p , a , g ) ;

screen. output () ;

return 0 ;

}

2 ) Algorithm description 1. Use the variables in the main function to assign values to the variables in the class;

3 ) Errors and solutions 1. Write the header file cstring as ctirng ; 2. Change the cin of the character Written as cin.getline causes output problems

3 . Design a line segment class line , the coordinates of the two vertices of the line segment object are (x1, y1) and (x2, y2) . The function member getlength is used to find the length of the line, and the function members setSp and setDp modify the vertex coordinates of the line segment. Please complete the definition of this class, and complete the generation of the line segment whose vertex coordinates are ( 2 , 5 ) ( 10 , 20 ) in the main function , calculate its length, modify its end point coordinates to ( 10 , 30 ) and then calculate its length And judge the change of its length.

1 ) Code

# include <iostream>

# include < math.h >

using namespace std;

class line

{

double x1 , y1 , x2 , y2 , len ;

public:

void getpos ( double h1 , double z1 , double h2 , double z2 ) ;

double getlength () ;

void setSp ( double h1 , double z1 ) ;

void setDp ( double h2 , double z2 ) ;

} ;

void line :: getpos ( double h1 , double z1 , double h2 , double z2 )

{ x1 = h1 ; x2 = h2 ; y1 = z1 ; y2 = z2 ; }

double line :: getlength ()

{ len = sqrt ( ( x1 - x2 ) \* ( x1 - x2 ) + ( y1 - y2 ) \* ( y1 - y2 ) ) ; return len ; }

void line :: setSp ( double h1 , double z1 ) { x1 = h1 ; y1 = z1 ; }

void line :: setDp ( double h2 , double z2 ) { x2 = h2 ; y2 = z2 ; }

int main()

{

line length;

int j ; double h1 , z1 , h2 , z2 , save ; char judge ;

cout << " Enter the coordinates of the first point: \n" ; cin >> h1 >> z1 ;

cout << " Enter the coordinates of the second point: \n" ; cin >> h2 >> z2 ;

length.getpos ( h1 , z1 , h2 , z2 ) ;

cout << " line segment length: " << length.getlength () << endl ;

do

{

cout << " Please enter the coordinates you want to modify: ";

cin >> j ;

save = length. getlength ();

switch ( j )

{

case 1:

cout << " Enter the coordinates of the first point: \n" ; cin >> h1 >> z1 ;

length.setSp ( h1 , z1 ) ;

break;

case 2:

cout << " Enter the coordinates of the second point: \n" ; cin >> h2 >> z2 ;

length.setDp ( h2 , z2 ) ;

break;

}

length.getpos ( h1 , z1 , h2 , z2 ) ;

cout << " New line segment length: " << length.getlength () << endl ;

cout << " The length changes to: " << fabs ( length.getlength () - save ) << endl ;

cout << " Continue? Yes - N/n ; No - any other key \n";

cin >> judge ;

}

while ( judge == 'N' || judge == 'n' ) ;

return 0 ;

}

2 ) Algorithm description Cit

3 ) Errors and solutions Missing semicolon at the end of the statement

4 . Please set up a class Student that describes the basic situation of students . The data members include 11 -digit student number ( char type array, the default value is "u0000000000" ), C++ grades, English and math grades (the default grade is 0 ), and the function members include getting student No., find out the total grade and average grade, change the student's student number, and the grades of each subject.

1) Please complete the definition of the Student class

Tips: The function of obtaining the student number returns the student number, and the return value is the first address of the student number array, so the return value type of the function should be defined as char \*

2) This class is tested in the main function, and it is required to output the total grade and average grade of the students. If there is an error in the student's information, it can be corrected.

# include <iostream>

# include < math.h >

# include <cstring>

using namespace std;

class Student

{

int C , E , M , S ;

char SC[12] ;

float A;

public:

Student ( int cpp , int eng , int mat , char SC[] ) ;

void changeinf ( int judge ) ;

void calculate ( int &sum , float &average ) ;

char\* getcode ( ) ;

} ;

Student :: Student ( int cpp , int eng , int mat , char SC[] )

{

C = cpp ; E = eng ; M = mat ; SC = SC ;

}

void Student :: changeinf ( int judge ) // change information

{

switch ( judge )

{

case 1 : cin >> C ; break ; case 2 : cin >> E ; break ;

case 3 : cin >> M ; break ; case 4 : cin >> SC ; break ;

}

}

void Student :: calculate ( int &sum , float &average ) // total score + average score

{

S = C + E + M;

A = S / 3 ;

sum = S;

average = A;

}

char\* Student :: getcode ( ) //get student number

{

return SC ;

}

int main()

{

Student no1 ( 0 , 0 , 0 , "u0000000000" );

int cpp , eng , mat , sum , judge ;

float average;

char go ;

do

{

cout << "Please select modification content 1-C++ 2-English 3-mathematics 4-student number\n";

cin >> judge ;

no1. changeinf ( judge ) ;

no1. calculate ( sum , average ) ;

cout << "Total score:" << sum << ' ' << "Average score: " << average << endl ;

cout << no1. getcode ( ) << endl ;

cout << "Continue? Yes-y/Y; No-any other key\n";

cin >> go ;

}

while ( go == 'Y' || go == 'y' ) ;

return 0 ;

}

**2. Suggestions for improving the content, methods and means of this experiment, as well as experimental experience**

**The experimental experience includes** : 1 ) Which knowledge points have been mastered Mastered everything except the difficult ones

2 ) Which knowledge points are difficult Array passing, char pointer

3 ) Suggestions for lectures none

4 ) Practice more remedial suggestions for lack of knowledge