EE2310 C++程式設計 HW3 (Ch 6)

**Part 1. Choice選擇題: 26%**

1) Breaking a program up into a set of manageable sized functions is called \_\_\_\_\_\_\_\_ programming.

A) functional

B) modular

C) break up

D) high-level

E) low-level

2) A function other than the main function is executed \_\_\_\_\_\_\_\_.

A) when it is first defined

B) only once

C) whenever it is called

D) when the main function finishes executing

E) never

3) In a function header, in addition to the name of the function, you are required to furnish \_\_\_\_\_\_\_\_.

A) a data type for each parameter

B) an identifier name for each parameter

C) the data type of the return value

D) All of the above

E) B and C, but not A.

4) In a function call, in addition to the name of the function, you are required to furnish \_\_\_\_\_\_\_\_.

A) a data type for each argument

B) an identifier name or constant for each argument

C) the data type of the return value

D) All of the above

E) A, and B, but not C.

5) Functions are ideal for use in menu-drive programs. When a user selects a menu item, the program can \_\_\_\_\_\_\_\_ an appropriate function to carry out the user's choice.

A) call

B) return

C) define

D) declare

E) randomly select

6) The value in \_\_\_\_\_\_\_\_ local variable is retained between function calls.

A) a global

B) an internal

C) a static

D) a dynamic

E) no

7) When used as a parameter, a \_\_\_\_\_\_\_\_ variable allows a function to access and modify the original argument passed to it.

A) static

B) value

C) reference

D) floating-point

E) default value

8) Two or more functions may have the same name provided that \_\_\_\_\_\_\_\_.

A) they do different things

B) one has a prototype and the other doesn't

C) their parameter lists are different

D) their return types are different

E) either C or D is true.

9) The \_\_\_\_\_\_\_\_ statement causes a function to end and the flow of control to move back to the point where the function call was made.

A) end

B) break

C) continue

D) return

E) exit

10) The \_\_\_\_\_\_\_\_ function causes the entire program to terminate, regardless of which function or control mechanism is executing.

A) terminate()

B) return()

C) continue()

D) exit()

E) break()

11) A function \_\_\_\_\_\_\_\_ is a statement that causes a function to execute.

A) prototype

B) header

C) definition

D) call

E) parameter list

12) A void function is one that \_\_\_\_\_\_\_\_.

A) has an empty function body

B) is never called

C) returns no value

D) has no parameters

E) returns a zero

13) A function can have \_\_\_\_\_\_\_\_ parameters, and it can have either zero or one return value(s).

A) zero to many

B) either zero or one

C) either one or two

D) a maximum of ten

E) no

14) When only a copy of an argument is passed to a function, it is said to be passed \_\_\_\_\_\_\_\_.

A) by copy

B) by reference

C) informally

D) by value

E) by default value

15) A function \_\_\_\_\_\_\_\_ eliminates the need to place the function definition before all calls to the function.

A) header

B) prototype

C) argument

D) parameter

E) that is void

16) In the following statement, what is 22.0?

cout<<sqrt(22.0);

A) a memory location

B) a parameter

C) an argument

D) a default value

E) an lvalue

17) In C++ numeric global variables are \_\_\_\_\_\_\_\_ by default and numeric local variables are \_\_\_\_\_\_\_\_ by default.

A) initialized to zero, initialized to zero

B) not initialized, not initialized

C) not initialized, initialized to zero

D) initialized to zero, not initialized

E) None of the above

18) A(n) \_\_\_\_\_\_\_\_ argument is one that is automatically passed to a parameter when the argument is left out of the function call.

A) floating-point

B) actual

C) null

D) default

E) static

19) A function other than the main function is executed \_\_\_\_\_\_\_\_.

A) when it is first defined

B) only once

C) whenever it is called

D) when the main function finishes executing

E) never

20) In a function prototype, in addition to the name of the function, you are required to furnish \_\_\_\_\_\_\_\_.

A) a data type for each parameter

B) an identifier name for each parameter

C) the data type of the return value

D) All of the above

E) A and C, but not B.

21) Functions are ideal for use in menu-drive programs. When a user selects a menu item, the program can \_\_\_\_\_\_\_\_ an appropriate function to carry out the user's choice.

A) call

B) return

C) define

D) declare

E) randomly select

22) In the following program, what would be the output?

void f(int x, int &y, int& z);

int main(){

int a=10, b=20, c=30;

f(a,b,c);

cout << a << “ “ << b <<” “ << c << endl;

return 0;

}

void f(int x, int &y, int& z){

x += 1; y += 2; z += 3;

cout << x << “ “ << y << “ “ << z << “, “;

}

A) 10 20 30, 10 20 30

B) 1 2 3, 10 2 3

C) 11 22 33, 10 20 30

D) 11 22 33, 11 22 33

E) 11 22 33, 10 22 33

23) A \_\_\_\_\_\_\_\_ is a dummy function that is called instead of the actual function it represents, to test that the call to and return from the function are working correctly.

A) stub

B) driver

C) test function

D) void function

E) prototype function

24) A \_\_\_\_\_\_\_\_ is a program module whose purpose is to test other modules by calling them.

A) stub

B) driver

C) main function

D) dummy program

E) pseudocode routine

25) Which of the following functions will be used in the function call: f(98, 99); ?

A) void f(int n, double m);

B) void f(double n, int m);

C) void f(double n, double m);

D) void f(int n, int m);

E) none of the above

26) When should pass-by-reference be used?

A) when data values being input in a function need to be known by the calling function

B) when a function must change existing values in the calling function

C) when a file stream object is passed to a function

D) when a function needs to have more than one return values.

E) all of the above

**Part 2. True/False是非題: 14%**

T **1.** It is possible for a function to have some parameters with default arguments and some without.

F **2.** If the closing brace of a function body is reached, the flow of control moves to the next function in the file.

T **3.** One reason for using functions is to break programs into a set of manageable units, or modules.

F **4.** A function with a return type of bool must return a value of either correct or incorrect T ／／Ｔ　Ｆ

F **5.** When you make a function call, the order of the arguments you send does not matter as long as the number of arguments matches the number of parameters the function has.

F **6.** Due to the static storage duration and file scope properties of global variables, it is considered good programming practice to suggest your use of them.

**F7.** Both function headers and function calls must list the data types of all data being passed to the function. T

F **8.** You may use the exit() function to return the flow of control from a function back to main(), regardless of where the function was called from.

**F9.** A local variable defined in a function can only be directly accessed in that function, i.e., it has automatic storage duration and block scope properties. However, if that local variable is specified with static, then it can be directly accessed outside the function. T

**T10.** When a copy of an argument cannot reasonably or correctly be made, such as when the argument is a file stream object, it must be passed by reference. F

T **11.** The following code segment illustrates a valid case of default parameter:

int f(int a, int b, double c); //function prototype

…

int f(int a, int b=1, double c = 0.5){….. } //function definition

int main(){…}

F **12.** One can always tell whether a function parameter is pass-by-value or pass-by-reference by observing only the function call itself.

**T13.** When a function has a mixture of parameters both with and without default arguments, the parameters with default arguments must be defined last F

T **14.** If we want to use the function shown below to inverse the value 20.0, we can just call the function: inv(20.0);

void inv(double& x){ if(x!=0) x = 1/x;}

**Part 3. Programming 程式題: 60%**

**1. Celsius Temperature Table**

The formula for converting a temperature from Fahrenheit to celsius is

*)*

where *F* is the Fahrenheit temperature and *C* is the Celsius temperature. Write a function named celsius that accepts a Fahrenheit temperature as an argument. The function should return the temperature, converted to Celsius. Demonstrate the function by calling it in a loop that displays a table of the Fahrenheit temperatures 0 through 20 and their Celsius equivalents.

**2. Present Value**

Suppose you want to deposit a certain amount of money into a savings account, and then leave it alone to draw interest for the next 10 years. At the end of 10 years you would like to have $10,000 in the account. How much do you need to deposit today to make that happen? To find out you can use the following formula, which is known as the presentvalue formula

The terms in the formula are as follows:

**•** *P* is the **present value**, or the amount that you need to deposit today.

**•** *F* is the **future value** that you want in the account (in this case, $10,000).

**•** *r*is the **annual interest rate** (expressed in decimal form, such as .042).

**•** *n*is the **number of years** that you plan to let the money sit in the account.

Write a program with a function named presentValue that performs this calculation. The function should accept the future value, annual interest rate, and number of years as arguments. It should return the present value, which is the amount that you need to deposit today. Demonstrate the function in a program that lets the user experiment with different values for the formula’s terms

**3. Stock Profit**

The profit from the sale of a stock can be calculated as follows:

where *NS* is the number of shares, *SP* is the sale price per share, *SC* is the sale commission paid, *PP* is the purchase price per share, and *PC* is the purchase commission paid. If the calculation yields a positive value, then the sale of the stock resulted in a profit. If the calculation yields a negative number, then the sale resulted in a loss.

Write a function that accepts as arguments the number of shares, the purchase price per share, the purchase commission paid, the sale price per share, and the sale commission paid. The function should return the profit (or loss) from the sale of stock.

Demonstrate the function in a program that asks the user to enter the necessary data and displays the amount of the profit or loss.

**4. Multiple Stock Sales**

Use the function that you wrote for Question 3 (Stock Profit) in a program that calculates the total profit or loss from the sale of multiple stocks. The program should ask the user for the number of stock sales, and the necessary data for each stock sale. It should accumulate the profit or loss for each stock sale and then display the total.

**5. Population**

In a population, the birth rate is the percentage increase of the population due to births and the death rate is the percentage decrease of the population due to deaths. Write a program that asks for the following:

**•** The starting size of a population

**•** The annual birth rate

**•** The annual death rate

**•** The number of years to display

The program should then display the starting population and the projected population at the end of each year. It should use a function that calculates and returns the projected new size of the population after a year. The formula is

whereN is the new population size, P is the previous population size, B is the birth rate, and D is the death rate.( *Do not accept numbers less than 2 for the starting size.*

*accept negative numbers for birth rate or death rate. Do not accept numbers less than*

*1 for the number of years.)*

**6. Transient Population**

Modify Programming Question 5 (Population) to also consider the effect on population caused by people moving into or out of a geographic area. Given as input a starting population size, the annual birth rate, the annual death rate, the number of individuals that typically move into the area each year(*arrivals)*, and the number of individuals that typically leave the area each year *(departures)*, the program should project what the population will be numYears from now. You can either prompt the user to input a value for numYears, or you can set it within the program. (*Do not accept negative numbers for birth rate, death rate, arrivals or departures.)*