警 示

《中山大学授予学士学位工作细则》第六条

考 试 作 弊 不 授 予 学 士 学 位

计算机科学系　　2010 上学期

《程序设计 I》期末考试试题(A)

任课教师：吴维刚、刘聪、舒忠梅　考试形式：闭卷　考试时间：2 小时

年级：10　专业：　计科、网工、信安　　姓名：_____ 学号：_____成绩_____

1. Single Answer Questions (only one choice is correct). 20points.

Choose the alternative(s) that best completes the statement or answers the question.

1) Which of the following constants is an octal number in C programming?
A) 843 B) 9x C) 01 D) 0x12

2) Character is represented by _____
A) source code B) hexadecimal code C) ASCII code D) machine code

3) A good programming style can_____
A) make the program more compact
B) prevent reader misunderstandings
C) easier for compiler to find errors
D) make program looks more beautiful

4) Suppose char x='b'; char y = 'a', what is the value of x after "y= x+(x-y)"?
A) b B) d C) a D) c

5) Suppose x = 0, y = -1, and z = 1. What is the printout of the following statement?

```
if (x > 0||x==0)
if (y < 0)
cout<<"x > 0 and y > 0";
else if (z > 0)
cout<<"x < 0 and z > 0";
```

A) x > 0 and y > 0; B) x < 0 and z > 0; C) no printout. D) x < 0 and z < 0;

6) Which of the following Boolean expressions is incorrect?
A) (4>=3)&&(3<=4) B) (x>0)||(x<0) C) -1<x<1 D) 5

7) What is y after the following switch statement is executed?

```
x=1;
switch(x+=1){
    case 1: y =0; break;
```

```
            case 2: y = 1; break;
            default: y+=1;
        }
```
A) 0 B) 1 C) 2 D) 3

8) What is sum after the following loop terminates?

```
int sum = 0, item = 0;
do{
    item++;
    sum += item;
    if(sum>4) break;
}while(item<5);
```

A) 5 B) 6 C) 7 D)8

9) Which of the following statements is NOT correct?

A) You can always write a loop without using break or continue;
B) A variable declared in the for loop can be used after the loop terminates;
C) A for loop can always be converted to a while loop;
D) A do-while will be executed at least once.

10) Which of the following is NOT an advantage of using functions?

A) Enabling the divide and conquer programming methodology
B) Providing logic abstraction
C) Reusing similar program logic
D) Hiding data from logic

11) To overload a function, you must declare function versions different in _____.

A) parameter list B) function name C) return type D) function header

12) Which of the following statement is true?

A) You can return a variable with any type
B) To call a function, the number of arguments must be the same as the number of parameters
C) A function may not return any value to the caller
D) The functions must be declared in the same order as they are called

13) Which of the following is NOT correct?

A) int a[2]; B) double b[] = {1, 2, 3}; C) float *c = new float[3]; D) char d[] = new char[5];

14) Which of the following statements can execute successfully?

A) double x[5]; cout<<x[5];
B) int x; cin>>x; int b[x];
C) char ch[10]; cin>>ch;
D) double d[3]; d = {1, 2, 3};

15) Which of the following function declarations is correct?

A) int f(int [][] a, int size1, int size2);
B) int f(int a[][], int size1, int size2);
C) int f(int a[][5], int size1);
D) int f(int a[4][5]);

16) To declare a pointer, you can use_____

A) int *p; B) int p*; C) int &p; D) int (*P);

17) Suppose int count = 5, what is the value of &count?

A) the reference of count; B) 5; C) the address of count; D) the pointer of count;

18) What is the printout of the following statements?

```
char *p = “abcd”;
p+=2;
cout<<p;
```

A) abcd B) ab C) cd D) memory error

19) Suppose int *list = new int[5], how to delete the array?

A) delete *list; B) delete list[5] C) delete list[] D) delete [] list

20) Which of the following statements is NOT true?

A) Every recursive function must have a base case or a stopping condition
B) Every recursive function can be converted to an iterative one
C) Every recursive function must have a return value
D) Recursion is not always helpful

2. Mistakes identification. 20points.

The following C++ code will not compile/execute correctly. Please find out the mistakes (will cause compiling or running errors) and briefly explain what the mistakes are. You do not need to correct the mistakes.

1) A program of integer division function.

```
1)  #include <iostream>
2)  using namespace std;
3)
4)  int fun(double m, double n){
5)      double result;
6)
7)      if(m>n)
8)          result = n/m;
```

2) A program for searching substring

```
1)  #include <iostream>
2)  using namespace std;
3)
4)  int length(char * string) {
5)      for (i = 0; ; ++ i)
6)          if (string[i] == ‘\0’) return i;
7)  }
8)  int equals(char *string1, char *string2, int length) {
```

```
9)      else
10)         result = m/n;
11)
12)     return result;
13) }
14) int main(){
15)     int m, n;
16)     cout<<"Result is "<<fun(m, n)<<endl;
17) }
```

```
9)      for (int i = 0; i <= length; ++ i)
10)         if (string1[i] == string2[i]) return 0;
11)     return 1;
12) }
13) // return i if string contains substring in position i.
14) // return -1 if string does not contain substring
15) int find(char * string, char * substring){
16)     int length1 = length(string);
17)     int length2 = length(substring);
18)     for (int i = 0; i <= length1 –length2; ++ i) {
19)         if (equals(substring, string+i, length2))
20)             return i;
21)     }
22)     return -1;
23) }
```

3. Program output analysis. 20points.

Analyze and write down the output for the following programs.

1) A program that shows the case of calling functions.
Please pay attention to the scope of different variables.

2) A program of recursive function.

```
1)  #include <iostream>
2)  using namespace std;
3)  int gint;
4)  int func(int num){
5)      gint++;
6)      int result;
7)      if((gint%2)==0){
8)          result = gint*num;
9)          cout<< "num = "<<num<<endl;
10)         cout<< "result = "<<result<<endl;
11)     }else {
12)         int num = 1;
13)         num=num*gint;
14)         result = num + gint;
```

```
1)  #include <iostream>
2)  using namespace std;
3)
4)  int func(int value) {
5)      static int i = 0;
6)
7)      i++;
8)      if (value % 2)
9)          func(value / 2);
10)
11)     if (value > 0)
12)         func(value / 3);
13)
14)     return i;
```

```
15)                 cout<< "num = "<<num<<endl;
16)                 cout<< "result = "<<result<<endl;
17)     }
18)     return result;
19)  }
20)  int main(){
21)     int num =1;
22)     while (num<4) num = num+ func(num);
23)     cout<< "num = "<<num<<endl;
24)     cout<<"gint = "<<gint<<endl;
25) }
```

```
15) }
16) int main(){
        cout<<"No. of loops: "<<func(12)
<<endl;
}
```

4. Fill-in-the-blank. 20points.

Please fill in the blanks in the follows programs to complete them.

1) The following program is written to calculate the sum of the sequence of fractional numbers), with a given n:

1, 1/2, 2/3, 3/5, 5/8, 8/13,... , i.e. $a_n/b_n = b_{n-1}/(a_{n-1}+b_{n-1})$

```
#include <iostream>
using namespace std;
double fun(int n){
      int i;
      double t,s,a,b,c;
      _____;                          //(1)
      a=1;
      b=1;
      for(i=0; i<n; i++){
            t=a/b;
            s=s+t;
            _____;                    //(2)
            a=b;
            b=c;
      }
      return s;
}
int main(){
      int n;
      cin>>n;
      cout<<"The final result is "<<fun(n)<<endl;
}
```

2) The following program is written to print out character as follows:

```
+++++----
-+++++---
--+++++--
---+++++-
```

```
#include <iostream>
using namespace std;

int main(){
    for(int i=0; i<4; i++){
        for(int j =0;_________; j++)          //(1)
            cout<<"-";
        for(int j=0; j<5; j++)
            cout<<"+";
        for(_______; j>0; j--)                //(2)
            cout<<"-";
        _______________                       //(3)
    }
}
```

5. Programming design. 20points.

Suppose strings contain digits and letters only. Write a function that separates the digits and letters, with the digits at the left side and the letters at the right.

For example, “12dca34Vt” will be concerted to “1234dcaVt”.

The prototype of the function should be:

void seprtDigLet(char *string);