國立暨南國際大學 105 學年度轉學生入學考試試題

第 2 節

科目：程式設計（以 C 和 C++為主）

編號：311　　適用：資工系二

考生注意：
1.依次序作答，只要標明題號，不必抄題。
2.答案必須寫在答案卷上，否則不予計分。
3.限用藍、黑色筆作答；試題須隨卷繳回。

本試題 共 4 頁 第 1 頁

程式題（每題 10%）

1. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Fundamental Data Types
// The sizeof Operator
#include <iostream>
using std::cout;
using std::endl;

int main()
{
   char a = 1;
   unsigned char b = 2;
   short c = 3;
   unsigned short d = 4;
   int e = 5;
   unsigned int f = 6;

   cout << sizeof(a)*sizeof(a) + sizeof(b)*sizeof(b) +
       sizeof(c)*sizeof(c) + sizeof(d)*sizeof(d) +
       sizeof(e)*sizeof(e) + sizeof(f)*sizeof(f) << endl;
   return 0;
}
```

2. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// for Loop
#include <iostream>
using std::cout;
using std::endl;

int main()
{
    unsigned short points[] = { 33, 7, 94, 68, 18, 6, 71, 70, 99, 85 };
    unsigned short K = sizeof points / sizeof( points[0] );
    unsigned short i=0, max, max2, p, p2;
    for (max=points[i++]; i < K ; i++)
    {
        if (max < points[i])
        {
            max = points[i];
            p = i;
        }
    }

    for (max2 = 0, i=0; i < K; i++)
    {
        if (max2 < points[i] && points[i] != max)
        {
           max2 = points[i];
           p2 = i;
        }
    }

    cout << p  << '\t' << max  << '\n';
    cout << p2 << '\t' << max2 << '\n';
    return 0;
}
```

3. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Pointers to char
// sizeof
#include <iostream>
using std::cout;
using std::endl;

int main()
{
    const char name[][10] = { "Alice", "Bob", "Charlie", "Dennis", "Emily" };
    const char* pstr[] = { "Alice", "Bob", "Charlie", "Dennis", "Emily" };

    cout << sizeof(name) << '\t'
         << sizeof(name[1]) << '\t'
         << sizeof(name[1][2]) << endl;
    cout << sizeof(pstr) << '\t'
         << pstr[1] << '\t'
         << *(pstr[1] + 2) << endl;
    return 0;
}
```

4. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Type Conversion
// switch
#include <iostream>
using std::cout;

int main()
{
    int even = 0, odd = 0;
    char str[] = "BELGIUM"; // 'A' == 65
    for (int i=0; i<7; i++)
        switch ( str[i] % 2 )
        {
            case 0:
                even++;
            case 1:
                odd++;
        }
    cout << "odd = " << odd << '\n'
         << "even = " << even << '\n';
    return 0;
}
```

5. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// continue vs. break
#include <iostream>

int main()
{
    const int K = 5;
    int count = 0;
    int i, j;
    for (i=K; i>0; i--)
        for (j=K; j>0; j--)
        {
            ++count;
            if (i == j) break;
        }
    std::cout << count << std::endl;
    return 0;
}
```

6. What will the following code display?

```
// Class Destructor
#include <iostream>
#include <cstring>

class CText
{
public:
    char* ptext;
    CText(const char* s)
    {
        ptext = new char[strlen(s)+1];
        strcpy(ptext, s);
    }
    ~CText()
    {
        std::cout << "Destructor called to release " << strlen(ptext)+1
             << " bytes memory of " << ptext << std::endl;
        delete [] ptext;
    }
};
int main()
{
    CText a("Alice"), b("Bob");
    return 0;
}
```

7. What will the following code display?

```
// Recursive Function Calls
#include <iostream>

void septenary(int n)
{
    if (n >= 7 )
      septenary (n / 7);
    std::cout << n % 7;
}

int main()
{
   septenary (615);
    return 0;
}
```

8. What will the following code display?

```
// Pointers as Arguments to a Function
#include <iostream>

void swap(int* i, int k)
{
    int temp;
    temp = *i; *i = k; k = temp;
    return;
}

int main()
{
    int a = 6;
    int b = 15;
    std::cout << a << b << std::endl;
    swap(&a, b);
    std::cout << a << b << std::endl;
    return 0;
}
```

9. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Function Overloading
#include <iostream>
using std::cout;

void star(int n)
{ for (int i=0; i<n; i++) cout << '*'; }

void star(int n, char c)
{ for (int i=0; i<n; i++) cout << c; }

int main()
{
    star(6, 'A');
    star(5);
    return 0;
}
```

10. Determine whether the following code has syntax errors or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Pass-by-Reference
#include <iostream>
using std::cout;

void swap3(int& a, int& b)
{
  int temp;
  temp = a; a = b; b = temp;
}

void print(int a, int b)
{ cout << a << '\t' << b << '\n'; }

int main()
{
    int x = 10, y = 20;
    swap3(&x, &y); print(x, y);
    return 0;
}
```