國立暨南國際大學 102 學年度第二學期 期末考試卷

科目名稱：程式設計		開課系所：資訊工程 學系		考試日期	2014.6.17
系所別：	年級：	學號：	姓名：	考試時間	14:10-16:00

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1. (10%) Determine whether the following code has syntax erros or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Size of a class with static members (P.397)
#include <iostream>

class CRectangle
{
public:
    static int nCount;
    int left;
    int top;
    int right;
    int bottom;

    CRectangle(): left(0), top(0), right(0), bottom(0)
    { ++nCount; }
};

int CRectangle::nCount = 0;

int main()
{
    CRectangle r1, r2;
    std::cout << sizeof(CRectangle) << std::endl;
    std::cout << sizeof(r1) << std::endl;
    return 0;
}
```

2. (10%) If we replace the OnDraw() function in P.953 as below, what result will be shown on the screen after you run the program? Please specify the coordinates of endpoints of each segment, or the coordinates of centers and boundaries.

```
void CSketcherView::OnDraw(CDC* pDC)
{
    const unsigned short n = 5;
    const float pi = 3.14159f;
    const int R = 100;
    CPoint center(2*R, 2*R);
    CClientDC aDC(this);
    float theta = pi * 2 / n;
    int i;

    CPoint vertex[n];
    for (i=0; i<n; i++)
        vertex[i] = CPoint( R*cos(theta*i + pi/2), R*sin(theta*i +
pi/2) ) + center;

    CPen aPen(PS_DOT, 1, RGB(0,0,255));
    CPen* pOldPen = aDC.SelectObject(&aPen);
    aDC.Ellipse(R, R, 3*R, 3*R);
    aDC.SelectObject(pOldPen);

    aDC.MoveTo(vertex[0]);
    for (i=1; i<=n; i++)
        aDC.LineTo(vertex[i*(n-1)/2 % n]);
}
```

3. (10%) Determine whether the following code has syntax erros or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Operators Precedence (P.77)
using std::cout;
using std::endl;

int main()
{
    int a = 6;
    int b = 1;
    int c = 7;
    a -= b -= c;
    cout << a << b << c << endl;
    return 0;
}
```

4. (10%) Determine whether the following code has syntax erros or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Pointer Arithmetic (P.194)
#include <iostream>
using std::cout;
using std::endl;

int main()
{
    int a[] = { 1, 2, 3, 4, 5 };
    int* p = &a[3];
    cout << *(a+2) * *++p << endl;
    return 0;
}
```

5. (10%) Determine whether the following code has syntax erros or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Scope of Variables (P.89)
#include <iostream>
using std::cout;
using std::endl;

int main()
{
    int i = 5;
    int count = 0;
    for (int i=0; i<3; i++)
        ++count;
    cout << i << endl;
    for (i=0; i<3; i++)
        ++count;
    cout << count << i << endl;
    return 0;
}
```

6. (10%) Determine whether the following code has syntax erros or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Shorthand notation (P.73)
// Pointers and Arrays (P.194)
#include <iostream>
using std::cout;
using std::endl;

int main()
{
    int a[] = { 7, 4, 8 };
    (*a *= *(a+1) ) -= *(a+2);
    for (int i=0; i<3; i++)
       cout << a[i];
    cout << endl;
    return 0;
}
```

7. (10%) Determine whether the following code has syntax erros or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Type Conversion (P.78)
// switch-case-break (P.135)
#include <iostream>
#include <cstring>
using std::cout;

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

8. (10%) Determine whether the following code has syntax erros or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Overloading the Assignment Operator (P.454)
#include <iostream>
using std::cout;
using std::endl;
class CData
{
public:
    int* pdata;
```

```
    CData(int v = 0)
    { pdata = new int(v); }
    CData operator=(CData& d)  // Pass by Reference
    { d.pdata = pdata;
      return CData( *d.pdata );
    }
    void Print()
    { cout << *pdata << endl; }
};
int main()
{
    CData a(6), b(1), c(7);
    c = a;
    a = b;
    a.Print();
    b.Print();
    c.Print();
    return 0;
}
```

9. (10%) Determine whether the following code has syntax erros or not. If it is correct, predict its output. If it is incorrect, point out the mistake(s).

```
// Pointers as Arguments to a Function (P.262)
#include <iostream>
using std::cout;
using std::endl;

int* f(int* array)      // Pass by Value
{
    return ++array;
}

int main()
{
    int a[3] = { 1, 2, 3 };
    cout << *f(a) << *a << endl;
    return 0;
}
```

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

```
// Transposition Cipher
#include <iostream>
#include <cstring>
using std::cout;
using std::endl;

int main()
{
    const unsigned short N = 6;
    char matrix[N * N + 1];
    char plaintext[] = "R orgpucfaapsufislst n iisUesea k us";

    char ciphertext[ sizeof(plaintext) ];
    char *p = plaintext;
    unsigned i, j;
```

```
    while (p < plaintext + strlen(plaintext) )
    {
    for (i=0; i<N; i++)
        for (j=0; j<N; j++)
        {
            matrix[i*N + j] = *p ? *p : 'A';
            ++p;
        }

    for (j=0; j<N; j++)
        for (i=0; i<N; i++)
            cout << matrix[i*N + j];
    }
    cout << endl;

    return 0;
}
```