

# Practice final exam

13 December 2013

You can assume that every program here begins with the usual `iostream` and namespace declarations.

**1. Describe the error in the following code fragment.**

```
char message[8] = "Nice job.";
cout << message << "\n";
```

**2. The following program contains two void functions. What does it output?**

```
void cron();
void yen();

int main()
{
    yen(); cron();
    cout << "\n";
    cron(); yen();
    cout << "\n";
    return 0;
}

void cron()
{
    cout << "X";
    yen();
    cout << "Z";
}

void yen()
{
    cout << "Y";
}
```

3. The following program uses nested function calls with return values. What is its output?

```
int zig(int x)
{
    if(x > 5) {
        return x - 2;
    }
    else {
        return x + 3;
    }
}

int zag(int y)
{
    return y*2;
}

int main()
{
    cout << zig(3) << "\n";
    cout << zag(4) << "\n";
    cout << zig(zag(5)) << "\n";
    cout << zag(zig(zag(6))) << "\n";
    return 0;
}
```

4. The following program uses an array. What does it output?

```
int main()
{
    const int SZ = 5;
    int g[SZ];
    int x = 5;
    for(int i = 0; i < SZ; i++)
    {
        x += i;
        g[i] = x;
    }
    for(int i = SZ-1; i >= 0; i--)
    {
        cout << g[i] << "\n";
    }
    return 0;
}
```

5. The following program contains a function with a reference parameter. What is the output?

```
void groon(int & x)
{
    cout << x << "\n";
    x--;
}

void preen(int y)
{
    cout << y << "\n";
    y++;
}

int main()
{
    int a = 3;
    int b = 4;
    groon(a);
    preen(b);
    preen(a);
    groon(b);
    cout << a << "\n";
    cout << b << "\n";
    return 0;
}
```

6. The following program contains a function with an array parameter. What does it output?

```
void stomp(int x[], int stop)
{
    for(int i = 0; i < stop; i++)
    {
        x[i]--;
    }
}

int main()
{
    const int SIZE = 5;
    int z[SIZE] = { 9, 7, 8, 7, 8 };
    stomp(z, 3);
    stomp(z, 2);
    stomp(z, SIZE);
    for(int i = 0; i < SIZE; i++)
    {
        cout << z[i] << " ";
    }
    cout << "\n";
    return 0;
}
```

7. The following program manipulates a string. What does it output?

```
int main()
{
    const int MAX = 40;
    char mesg[MAX] = "Thor";
    cout << mesg << "\n";
    mesg[6] = '\0';
    mesg[5] = 'n';
    mesg[4] = 'i';
    cout << mesg << "\n";
    return 0;
}
```

8. The following program manipulates a string. What does it output?

```
int main()
{
    char name[] = "Ada Lovelace";
    int i = 0;
    while(name[i] != '\0')
    {
        switch(name[i])
        {
            case 'a': case 'A':
            case 'e': case 'E':
            case 'i': case 'I':
                name[i] = 'o';
            }
        i++;
    }
    cout << name << "\n";
    return 0;
}
```