

Practice midterm solutions

2 November 2015

1. The following program just uses variables. What does the program output?

```
#include <iostream>
using namespace std;
int main()
{
    int lisa = 5;
    double bart = 5 / 2.0;
    lisa = lisa + 1;
    int maggie = lisa / 2;
    maggie = maggie * 3;
    cout << lisa << ", " << bart << ", " << maggie << "\n";
    return 0;
}
```

Output:

6, 2.5, 9

2. The following program uses ASCII character arithmetic. What does the program output?

```
#include <iostream>
using namespace std;
int main()
{
    char hundred = 'C';
    char five = 'V';
    char marty = five + 2;
    char shelly = hundred + 6;
    cout << hundred << marty << marty << shelly << five << endl;
    return 0;
}
```

Output:

CXXIV

3. The following program uses conditions. What does the program output?

```
#include <iostream>
using namespace std;
int main()
{
    int bilbo = 9;
    int frodo = 3;
    if(bilbo % 2 == 0)
    {
        frodo *= 2;
        bilbo += 1;
    }
    else
    {
        bilbo = bilbo - 1;
        frodo *= 4;
    }
    cout << bilbo << ", " << frodo << "\n";
    return 0;
}
```

Output:

8, 12

4. Given numPeople = 10, numCars = 2, userKey = 'q', mark each of these expressions as true or false.

- a. true numPeople >= 10
- b. false (numPeople >= 10) && (numCars > 2)
- c. true (numPeople >= 20) || (numCars > 1)
- d. false !(numCars < 5)
- e. true !(userKey == 'a')
- f. true userKey != 'a'
- g. true !((numPeople >= 10) && (numCars > 2))
- h. true (userKey == 'x') || ((numPeople > 5) && (numCars > 1))

5. The following program uses string modification operations. What does the program output?

```
#include <iostream>
using namespace std;
int main()
{
    string name = "Billie";
    cout << name << endl;
    name.append("ep");
    cout << name << endl;
    name.replace(1, 4, "l");
    cout << name << endl;
    name.push_back('!');
    cout << name << endl;
    return 0;
}
```

Output:

```
Billie
Billieep
Bleep
Bleep!
```

6. The following program uses a switch. What does the program output?

```
#include <iostream>
using namespace std;
int main()
{
    int bill = 9;
    int ted = bill - 4;
    switch(ted)
    {
        case 3: cout << "ant ";
        case 2: cout << "bee "; break;
        case 5: cout << "cat ";
        case 4: cout << "dog "; break;
        default: cout << "eel ";
    }
    cout << "\n";
    return 0;
}
```

Output:

cat dog

7. The following program uses *nested if/else* statements. Given the values of `baz` and `tar` as inputs, what does the program output?

- `baz = 6; tar = 3;` Output: Belgium Chile France
- `baz = 3; tar = 6;` Output: Denmark France
- `baz = 6; tar = 9;` Output: Chile France
- `baz = 9; tar = 6;` Output: Austria Belgium Chile France
- `baz = 3; tar = 4;` Output: Denmark Egypt France

```
#include <iostream>
using namespace std;
int main()
{
    int baz, tar;
    cin >> baz >> tar; // Receives values as shown above
    if(baz > 4)
    {
        if(baz > 8)
        {
            cout << "Austria ";
        }
        if(tar < 8)
        {
            cout << "Belgium ";
        }
        cout << "Chile ";
    }
    else
    {
        cout << "Denmark ";
        if(tar < 6)
        {
            cout << "Egypt ";
        }
    }
    cout << "France\n";
    return 0;
}
```