

3. Convert the following C++ code to Java (2%):

```
#include <iostream>
using namespace std;
class S {
protected:
    int n;
public:
    S(int n) {
        this->n = n;
    }
    virtual int g() = 0;
};
class T : public S {
private:
    int n;
public:
    T(int m) : S(m) {
        n = ++m;
    }
    int g() {
        return n;
    }
    int h() {
        return S::n;
    }
};
void p(S &s) {
    cout << s.g() << endl;
}
void main() {
    T t(5);
    cout << t.g() << endl;
    cout << t.h() << endl;
    p(t);
}
```

4. Lines of code that can throw unchecked exceptions do not need to be inside of a try block. Explain why this is the case. (1%)

5. Give two reasons why a programmer would choose to use an anonymous inner class rather than a non-anonymous class? (0.5% + 0.5%)

6. Which of the following acknowledge the preferred height and width of a component? Circle all that apply. (1%)

BorderLayout

FlowLayout

CardLayout

GridLayout

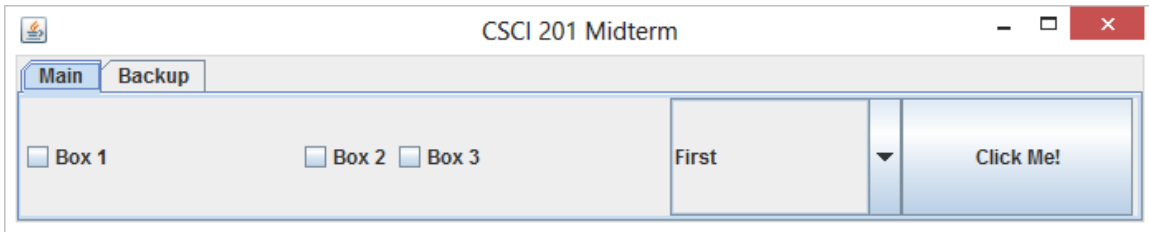
GridBagLayout

BoxLayout

GroupLayout

null layout

7. Provide the code to setup the following JFrame. Include all of the layout managers, panels, and components. Do not include any actions. Do not use the null layout. (2%)



8. Explain when adapters are used. (1%)

9. When using JTrees, in what class is the data for the tree held? (1%)

**10. What is the advantage to using generics instead of just overloading methods?
(1%)**

11. Draw the GUI generated by the following code. (1%)

```
Object [] options = {"Approve", "Deny"};
int value = JOptionPane.showOptionDialog(MyFrame.this,
    "Terms and Agreements",
    "Licensing of Application",
    JOptionPane.OK_CANCEL_OPTION,
    JOptionPane.WARNING_MESSAGE,
    null,
    options,
    options[0]);
```