CS250 Extreme Programming Problem

The purpose of this exercise is to reinforce the polymorphism lecture from the last class. You are to get together in your groups and in 65 minutes try and code the following:

a) Grab the project Polymorphism from the CS250-02 Public folder. This project is a DarkGDK shell with all of the linking done.

b) Create an abstract class Shape in Shape.h with attributes shapeName (string), shapeType (Bomb, Missile, Tank), shapeID (integer). The abstract class is to have a pure virtual function update and draw.

c) Create a concrete class Tank derived from Shape that displays a tank that is able to move east and west along the bottom of the screen using the left and right arrows. Display the Tank as a filled in rectangle.

d) Create a concrete class Missile derived from Shape that can be shot from the middle of the tank using a mouse click. Display the missile as a line segment moving straight up from the middle of wherever the tank is.

e) Create a concrete class Bomb derived from Shape that is at the top of the screen moving east and west bouncing off the edges of the screen. Just display the bomb as a filled in circle.

f) If you have properly created each of these classes, then the following loop will allow all of the functionality described to be shown on the display:

```
for (int i = 0; i < Shape::numberOfShapes; ++i)
{
  pcShape[i]->update ();
  pcShape[i]->draw ();
}
```

Note: numberOfShapes is a static in the Shape class that contains the number of shapes created.

Everyone needs to understand this problem/solution for the final. Polymorphism will be a major part of the exam!!!!