Exercises – Polymorphism

Exercises:

1. Create an Enemy base class, give it a virtual Move() function that when called prints the text “The enemy walks towards you” to the console.
2. Also give the class a pure virtual PrintDescription() function.
3. Create three classes that derive from Enemy: Dragon, Unicorn, and Goblin.
   1. In the Dragon class, override the Move() function so that it prints the text “the enemy flies above you”
   2. In the Unicorn class, override the Move() function so that it prints the text “the enemy gallops towards you”
   3. In each of the three derived classes, override the PrintDescription() function to print text describing the creature.
4. In your main, create an array of pointers to Enemies. You’ll need to use pointers to pointers (\*\*) for this. Loop through the array and initialise each pointer with one of the three derived classes selected at random. Notice how you can store all three different classes in the one array because they all derive from the same Enemy base class.
5. Once the array is initialised, loop through it again and call the PrintDescription() and Move() function for each one. Notice that although you’re calling these functions on a pointer to an Enemy, the system automatically works out which version of the virtual function to call and the correct text is printed. In the case of the Goblin, it doesn’t override the Move() function, and so the base class version is called.
6. Make sure you delete all your pointers at the end so you don’t get any memory leaks. You will have to delete each of the pointers in the array in a loop, and then finally delete the array itself.