1. Given the following class definitions, what would be printed on screen?

Java

```
class Animal {
  public void print() {
    System.out.print("Animal ");
    sound();
  }

  public void sound() {
    System.out.print("A ");
  }
}

class Mammal extends Animal {
  public void print() {
    System.out.print("Mammal ");
    super.print();
  }

  public void sound() {
    System.out.print("M ");
  }
}

class Cat extends Mammal {
  public void print() {
    System.out.print("Miyav ");
    sound();
  }
}

class Dog extends Mammal {
  public void sound() {
    System.out.print("Hav ");
  }
}

public class Zoo {
  public static void main(String[] args)
{
    Cat cat = new Cat();
    Dog dog = new Dog();
    Mammal ma1 = new Cat();
    Mammal ma2 = new Dog();
    Mammal ma3 = new Mammal();

    cat.print(); System.out.println();
    dog.print(); System.out.println();
    ma1.print(); System.out.println();
    ma2.print(); System.out.println();
    ma3.print(); System.out.println();
  }
}
```

C++

```
#include <iostream>
using namespace std;

class Animal {
public:
  virtual void print() {
    cout << "Animal ";
    sound();
  }

  virtual void sound() {
    cout << "A ";
  }
};

class Mammal : public Animal {
public:
  virtual void print() {
    cout << "Mammal ";
    Animal:: print();
  }

  virtual void sound() {
    cout << "M ";
  }
};

class Cat : public Mammal {
public:
  virtual void print() {
    cout << "Miyav ";
    sound();
  }
};

class Dog : public Mammal {
public:
  virtual void sound() {
    cout << "Hav ";
  }
};

int main() {
  Cat *cat = new Cat();
  Dog *dog = new Dog();
  Mammal *ma1 = new Cat();
  Mammal *ma2 = new Dog();
  Mammal *ma3 = new Mammal();

  cat->print(); cout << "\n";
  dog->print(); cout << "\n";
  ma1->print(); cout << "\n";
  ma2->print(); cout << "\n";
  ma3->print(); cout << "\n";
  return 0;
}
```

2. What if we had static binding instead of dynamic binding? That is, what would the output be if the methods were all non-virtual?

3. What would the output be if `print()` were virtual but `sound()` were not?

4. What would the output be if `print()` were non-virtual but `sound()` were virtual?