

## Use Polymorphism (abstract classes) to Create appropriate classes for the following scenario:

A designer has come up with the following basic weapons design for an RPG game:

### **Melee and Ranged:**

All weapons have a base damage, base range, action points and Critical Damage.

All weapons have a poke attack that does 1 damage.

### **Weapon Ranges**

Attacks always hit.

Melee base range is always 1.

### **Damage**

All weapons have damage variance calculated as:

**Melee:** Everything does 100% of base damage. Always uses 1 action point.

**Ranged:** Everything within range does between 100% and 50% of base damage. Always uses 2 action points.

### **Critical Damage**

Melee and Ranged have a chance at doing critical damage which deals 200% of damage and is calculated by:

**Melee:** 10% chance of Critical Damage.

**Ranged:** 5% chance of Critical Damage. On critical only one action point is used.

1. *Create a class diagram for the above.*
2. *Write classes from the class diagram.*