Object-Oriented Programming and Design (CSE600A-ECE600A)

LAB ASSIGNMENT 3

In this assignment you will be creating a war game that consists of 3 different types of weapons– Rock, Paper and Scissors. A war is fought between 2 Teams. Team, Rock, Scissors and Paper are classes. Each team will have these weapons. You have to modify the rules of the game slightly. Each weapon (Rock, Paper or Scissor) is assigned a numerical value of strength, which is decided during runtime using random number generator. This value of strength for each of the weapons will remain fixed throughout.

Now, when facing each other, Rock has an advantage over Scissors, Paper has the advantage over Rock, and Scissors over paper. The advantage is described as follows:
If suppose the strengths of Rock, Paper and Scissors are 5, 7, and 24 respectively, then:

1. **When rock fights against paper**, the rock's strength is halved and the paper's strength is doubled. So, the rock's strength becomes 2 and the paper's strength becomes 14. Hence, paper wins the battle between the two in this case.
2. **When paper fights against scissors**, paper's strength is halved and the scissors' strength is doubled. So, the paper's strength becomes 3 and scissors' strength becomes 48. Thus, scissors wins the battle between paper and scissors.
3. **When scissors fight against rock**, scissors' strength is halved and rock's strength is doubled. So, the scissor's strength becomes 12 and rock's strength becomes 10. Thus, scissor wins the battle between rock and scissor.
4. **When weapon of same type flight:** Weapon with the greater strength wins.

To implement this, each team will have objects of all three weapons and each weapon will have an Integer field called strength, and a String name.
Each weapon contains a set of functions:

*   Void setStrength(int): to set the strength of the weapon using random number generator
*   Int getStrength(): returns the strength of the weapon
*   Boolean battle(weapon): a public function which compares the strengths of the two weapons according to the rules mentioned above and returns true or false accordingly.

War between 2 teams:
They will fight with each other 20 times. In each round, weapons are selected by both the teams randomly. So in one round there will be 3 battles where teams can use each weapon only once. The team which wins 2 out of 3 battles will get the point. Wining one round will award one point to the winning team.

Final output will be the score of both the teams.