

Instruction for Doing Assignment: Write the complete C++ code with your name and class roll written on the top of the program as comment.

Assignment #1

Implement a class called **Tool**. It should have an **int** field called **strength** and a **char** field called **type**. You may make them either **private** or **protected**. The Tool class should also contain the function **void setStrength(int)**, which sets the strength for the Tool.

Create 3 more classes called **Rock**, **Paper**, and **Scissors**, which inherit from Tool. Each of these classes will need a constructor which will take in an **int** that is used to initialize the strength field. The constructor should also initialize the type field using 'r' for Rock, 'p' for Paper, and 's' for Scissors.

These classes will also need a public function **int fight(Tool)** that compares their strengths in the following way:

- Rock's strength is doubled (temporarily) when fighting scissors, but halved (temporarily) when fighting paper.
- In the same way, paper has the advantage against rock, and scissors against paper.
- The strength field shouldn't change in the function, which returns true if the original class wins in strength and false otherwise.

You may also include any extra auxiliary functions and/or fields in any of these classes. Run the program without changing the main function, and verify that the results are correct.

Assignment #2

Create a class called Musicians to contain three methods **string ()**, **wind ()** and **perc ()**. Each of these methods should initialize a string array to contain the following instruments:

- **veena, guitar, sitar, sarod** and mandolin under **string ()**
- **flute, clarinet saxophone, nadhaswaram** and **piccolo** under **wind ()**
- **tabla, mridangam, bangos, drums** and **tambour** under **perc ()**

It should also display the contents of the arrays that are initialized. Create a derived class called **TypeIns** to contain a method called **get ()** and **show ()**. The **get ()** method must display a means as follows:

Type of instruments to be displayed

- a. String instruments
- b. Wind instruments
- c. Percussion instruments

The **show ()** method should display the relevant detail according to our choice. The base class variables must be accessible only to its derived classes.