



The class diagram above omit some relationship between classes such as players can fight with monsters, players can save God and etc.

**RolePlayGame:** It is an abstract class which only contains some general method for RPG game. The “InitGame” method will prepare the background of the game, add the monsters, different adventures, multiple players, different penances and some treasure into the game. Besides, the three methods followed will initiate different components in an RPG game.

**RPGRules:** It is an interface which contains several judging rules in an RPG game, including calculating damage, judging whether players can step into next level or whether they win; it also includes whether players are dead after some actions.

These two use Template Pattern. They have some basic operations in an RBG game. By developing the two class and interface above, we can easily develop any other RPG games.

**CaveAdventureGameEngine:** It is a game engine used to initialize the “cave adventure” game, it can initialize a cave (maybe several caves).

For any components including “Game Background”, “Monster”, “God”, “Treasure” in the game, I used “Simple Factory Pattern”. It can not only ensure each sub-component has their own features, but also can they be initialized by a shared “Factory” class. Thus, when you try to create a new component, you just need to add this component and implement corresponding interface, then modify the code in the “Factory” class.

**GameBackGround:** This class has the method “InitBackground” including setting the color and style

for the background

Caves: Since I think the the action of generating a poem shouldn't be finished by players or God, I put the action into the caves class. One caves may contain several players (There may be several players in the future), several Gods, and several adventures.

Adventure: Can be called "Level" in another environment. In each adventure, there may be several treasures, 1 or n monsters (In another game there may be several monsters) and the specific mission in this adventure.

Players: A player can pick up treasures, fight with monsters and they can also make dreams. One player may have several dreams. In the dream, there may be some lyric such as "Old MacDonald had a farm...". The dream can also generate a farm which can randomly make different animals. The players also have name, gender etc., they are omitted.

Treasure: The treasure may have some BUFF for players (Here the treasure may make you sleep, and a true treasure can make you enter next level alive).

Monster: Every monster can attack the players (Though in this game monster cannot) and guard the treasures

EvilGoblin: The evil goblin can destroy the whole village if the poem has repeated words.

God: The god can generate a special word for a poem.