

THE DRAGON CLASS

Using your knowledge of Java syntax and class design, code the Dragon class! Don't forget to **research** if you can't remember how to do something in Java e.g. *write a method or generate a random number*.



class Dragon

```
//private Dragon property1: name eg "Harold"
//private Dragon property2: fireBreathing eg true

//create a public constructor method where each property is
assigned a parameter

//create public accessor and mutator methods for the above
properties

//a method to get a word from the Dragon.
method getRandomWord()

    String[ ] words = {"Hola!", "Roar!!", "Grrrr!!", "Mad!!",
    "Hola!!", "Angry!!!", "Fire!!", "Fight!!", "Kill!!!"}

    rand = random(0,8);

    return words[rand];

end of getRandomWord method

end of class
```

A computer program allows a player to fight against a non-firebreathing Dragon! The fight continues until the Dragon says "Hola!" or it becomes a firebreather.

At that time, if the player has more than 20 points and the dragon is not a firebreather, the player wins! Else the Dragon wins.

Here is the game in Pseudocode. Code the game using Java (hint: create Main.java)

```
playerScore = 0 //initialise playerScore

d = Dragon("Harald", False) //instantiate a Dragon object1

dragonWord = d.getRandomWord()

//game loop
loop while dragonWord != "Hola!" and !d.getFireBreathing()
    //update the player score
    playerScore = playerScore + random(0,3)
    //attempt to change the Dragon's firebreathing status
    rand = random(1,1000)

    if (rand > 200 and rand < 210) or (rand > 900 and rand < 910)
then
    d.setFireBreathing(true)
    output "Game over, sucker!!"
end if
    //get the next Dragon word!
    dragonWord = d.getRandomWord()
    output dragonWord
end loop

//determine the winner
if playerScore >=20 then
    if !d.getFireBreathing() then
        output "You win this time..."
    else
        output "Burned to a crisp! "+d.getName()+" wins!"
    end if
else
    if !d.getFireBreathing() then
        output "Hola! "+d.getName()+" wins!"
    else
        output "Burned to a crisp! "+d.getName()+" wins!"
    end if
end if
```

¹ Note: d is a reference to the object; it is a **reference variable**

Play the game a few times.

Does the game logic allow for both the Dragon and the player to win a fair number of times?

If not, can you adapt the code such that both have a fair chance to win.

Be creative and try to answer your own questions by doing additional research.



Program Development

To keep our design as **modular** as possible, let's design a *helper function* to determine the winner.

It will process an integer and a reference to a Dragon object:

```
public static void determineWinner(int score, Dragon dragon){  
    //logic to determine the winner goes here  
}
```

Design this function.

Then, rewrite your program to call this function.