

Don't Fear the OOP!

The purpose of the following Shrek-themed story is our attempt to explain the key concepts of Object-Oriented Programming.

In any story, there is a setting.

A swamp has a few key ingredients: mud puddles, danger signs, and outhouse. It has a location and exists in present time. It usually has 3 mud puddles, is located in the forest, and is situated in 2001.

Swamp

- has a certain number of mud puddles
- has a certain number of danger signs
- has a certain number of outhouses
- is located somewhere
- exists at a certain time

- a typical Swamp would have
 - number of mud puddles = 3
 - location = Forest
 - time period = 2001

```
public class Swamp
{
    int mudPuddles;
    int dangerSigns;
    int outhouses;
    String location;
    int time;

    public Swamp()
    {
        mudPuddles = 3;
        location = "Forest";
        time = 2001;
    }
}
```

Now we have the setting of Shrek's story, we need the characters.

An Ogre is a large, hideous humanoid creature. They may be different colors such as Green, Brown, and Grey. They have a head, body, ears, legs, arms, and eyes. They have characteristics such as height, weight, and color.

Ogre

- Ogres have legs
- Ogres have arms
- Ogres have a head
- Ogres have eyes
- Ogres have ears
- Ogres have layers
- Ogres have a height
- Ogres have a sex

Ogres

- have two legs
- have two arms
- have one head
- have two eyes
- have two ears
- have 500 layers

```
public class Ogre {  
    int legs;  
    int arms;  
    int head;  
    int eyes;  
    int ears;  
    int layers;  
    int height;  
    String sex;  
    public Ogre()  
    {  
        legs = 2;  
        arms = 2;  
        head = 1;  
        eyes = 2;  
        ears = 2;
```

```
        layers = 500;
    }
}
```

We have the base for a typical ogre. We need to adjust it to be a specific ogre that makes a true character (Shrek).

Shrek is a specific ogre. He has the basic descriptions of an ogre in that he has 1 head, 2 legs, 2 eyes, etc. He has, however, additional qualities that renders him a unique ogre - he has a preference for food; he has an amount of earwax; he has a unique height...

Shrek extends the idea of Ogre.

- has a mood

- has a favourite food

- has a unique height

- has a certain amount of earwax.

- has a crush.

For a given Shrek,

- He will be male.

- He will enjoy rats.

- He will have some height.

- He will start out with 0 happiness.

- He will start the day with the maximum amount of earwax.

```
public class Shrek extends Ogre {
    String favouriteFood;
    double height;
    int happiness;
    int amountOfEarwax;
    Ogre crush;

    public Shrek() {
        sex = "Male";
        favouriteFood = "Rats";
        height = 2.23;
        happiness = 0;
        amountOfEarwax = 100000;
    }
}
```

We have a setting, a character, now we actually need to make the character do something. We need an event.

Shrek Goes for a Walk in the Forest

This story takes place in Shrek's swamp. It has two mud puddles, 1 danger sign, and 5 outhouses.

Shrek's Walk

Swamp shrekSwamp is a new Swamp.
the number of mud puddles in shrekSwamp is two.
the number of danger signs in shrekSwamp is one.
the number of outhouses in shrekSwamp is five.

```
public class ShrekWalk {  
    public static void main (String args[])  
    {  
        Swamp shrekSwamp = new Swamp;  
        shrekSwamp.mudPuddles = 2;  
        shrekSwamp.dangerSigns = 1;  
        shrekSwamp.outhouses = 5;  
    }  
}
```

Shrek's level of happiness increases by 1 with every hour he spends in the forest.

spendHourInForest
happiness increases by 1.

```
public void spendHourInForest() {  
    happiness++;  
}
```

Every time Shrek meets another beautiful ogre, his happiness increases by 10000 and his crush becomes that ogre. He exclaims "I'm so in love with " + insert his ogre crush name.

```
meetBeautifulOgre
    add 10000 to Shrek's happiness
    print I'm so in love with + (the specified damsel) +!"
```

```
public void meetBeautifulOgre (Ogre crush) {
    happiness += 10000;
    this.crush = crush;
    System.out.println("I'm so in love with " + crush + "!");
}
```

Shrek is a specific ogre. He has the basic descriptions of an ogre in that he has 1 head, 2 legs, 2 eyes, etc. He has, however, additional qualities that renders him an unique ogre - he has a preference for foods; he has a sex; he has an unique height...

Shrek's level of happiness increases by 1 with every hour he spends in the forest.

Every time Shrek meets another beautiful ogre, his happiness increases by 10000 and his crush becomes that ogre. He exclaims "I'm so in love with " + insert his ogre crush name.

Shrek extends the idea of Ogre.

```
Shrek
    has a mood
    has a sex
    has food he likes
    has a unique height
    has a certain amount of earwax.
    has a crush.
    For a given Shrek,
        He will be male.
        He will enjoy rats.
        He will have some height.
        He will start out with 0 happiness.
        He will start the day with the maximum amount of earwax.
    spendHourInForest
        happiness increases by 1.
    meetBeautifulOgre
        add 10000 to Shrek's happiness
        print I'm so in love with + (the specified damsel) +!
```

```
public class Shrek extends Ogre {
    String sex;
    String favouriteFoods;
    double height;
```

```

int happiness;
int amountOfEarwax;
Ogre crush;

public Shrek() {
    sex = "Male";
    favouriteFoods = "Rats";
    height = 2.23;
    happiness = 0;
    amountOfEarwax = 100000;
}

public void spendHourInForest() {
    happiness++;
}

public void meetBeautifulOgre (Ogre crush) {
    happiness += 10000;
    this.crush = crush;
    System.out.println("I'm so in love with " + crush + "!");
}
}

```

Here is the main plot of Shrek's Walk at Shrek's swamp: There is a swamp called shrekSwamp. shrekSwamp has two mud puddles, 1 danger sign, and 5 outhouses. There is an ogre named Shrek, who is male, enjoys rats, is 2.23 metres tall, has 0 happiness, and has 100000 litres of ear wax. Shrike is a female ogre who is 2.22 metres tall and enjoys cockroaches. Shrek spends some hours in the forest and he becomes increasingly happier. Then, Shrek meets her in the forest and falls in love with Shrike.

Here is the main plot of ShrekWalk at Shrek Swamp

```

There is a swamp called shrekSwamp;
    the number of mud puddles in shrekSwamp is two.
    the number of danger signs in shrekSwamp is one.
    the number of outhouses in shrekSwamp is five.

There is a new Ogre named Shrek;
    He will be male.
    He will enjoy rats.
    He will be 2.23 metres tall.
    He will start out with 0 happiness.
    He will start the day with the maximum amount of earwax.

```

There is a new Ogre named Shrake;
She will be female.
She will be 2.22 metres tall.
She will enjoy cockroaches.

Shrek spends 2 hours in the forest;
Shrek meets Shrake.

```
public class ShrekWalk {  
    public static void main(String args[]) {  
        Swamp shrekSwamp = new shrekSwamp();  
        shrekSwamp.mudPuddles = 2;  
        shrekSwamp.dangerSigns = 1;  
        shrekSwamp.outHouses = 5;  
        Shrek shrek = new Shrek();  
        shrek.sex = "Male";  
        shrek.favouriteFoods = "Rats";  
        shrek.height = 2.23;  
        shrek.happiness = 0;  
        shrek.amountOfEarwax = 100000;  
        Ogre shrake = new Ogre();  
        shrake.sex = "female";  
        shrake.height = 2.23;  
        shrake.favouriteFoods = "Cockroaches";  
        shrek.drinkWhiskey();  
        shrek.meetBeautifulOgre(shrake);  
    }  
}
```