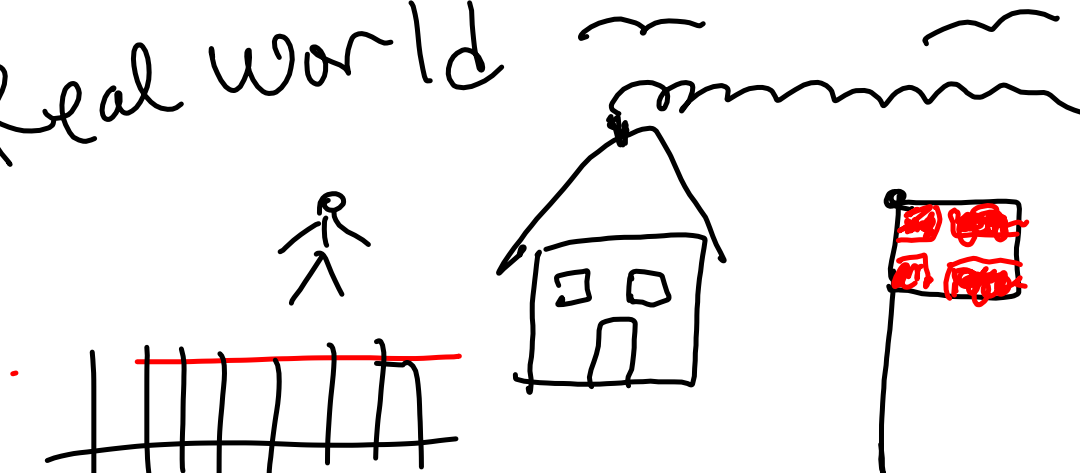


u 3

Real world



House
 25000 door wood 1x2m
 1000 windows 95x110
 each roof tile 30x50cm
 5/tile walls brick

Try to model the house

OO viewed as Modelling

Pioneered in the 1960's

Simula 67

Ole-Johan Dahl

Kristen Nygaard

Each modelled "things"
represented by an object
House Window Wall Roof

Class : Object Description
· Interface
· State Instance Variables
· Implementation of Methods

class Window

Interface

```
int get Width ()
int get Height ()
int get Area ()
```

```
int width;
int height;
```

STATE

Implementation of methods

```
int get Width () {
  return width;
}
```

```
int get Area () {
  return width * height;
}
```

Encapsulation

```

class BA {
  private
  public int balance = 0; state
  public int fetchBalance () { return balance; }
  public void deposit (int amount) { balance += amount; }
  public int withdraw (int amount) { balance -= amount;
    { if (amount > balance) amount = balance;
      balance -= amount;
      return amount;
    }
  }
}

```

balance = balance + amount;

```

type
BA myBA, myBA2;

```

Declaration of 2 variables

```

myBA = new BA();

```

NULL

```

myBA2 = new BA();

```



bit.do / NM 2016

```

int i;

```

```

myBA.deposit(10);

```

↑ object method parameter

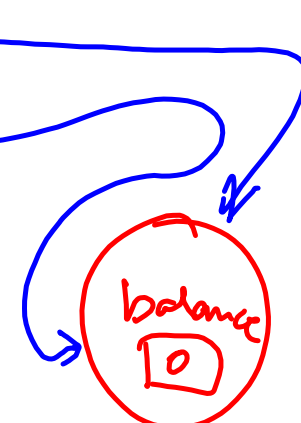
Constructors

```
void BA () {  
    balance = 0;  
}
```



More than one Constructor

```
BA (int startAmount) {  
    balance = startAmount;  
}  
BA () {  
    balance = 0; BA(0);  
}  
myBA = new BA ( 100 );  
myBA2 = new BA ( );
```

BA my BA₁ my BA₂;
my BA = new BA();
my BA₂ = my BA;



```
THIS    private  
         String name;  
void setName (String name) {  
    this.name = name;  
}
```

ArraysmyKids 

```
String months[] = new String [12];
```

```
String [] myKids = new String [3100];
```

```
myKids [0] = "Klaus";
```

```
myKids [1] = "Mary";
```

```
myKids [2] = "David";
```

```
→ myKids [3] = "ups";
```

4

ArrayList 

```
ArrayList < String > myKids =  
    new ArrayList < Strings > ();
```

```
myKids.add ("Klaus"); 1
```

```
myKids.add ("Mary"); 2
```

```
myKids.add ("Daniel"); 3
```

```
myKids.add ("Ups"); 4
```

Accessing

```
String name = myKids.get(1);
```

```
myKids.set(0, "Claus");
```

```
myKids.size();
```

```
String last = myKids.get(myKids.size()-1);
```

off-by one

Dynamic Array 😊