



CO452 Programming Concepts

Week 5 – Introduction to Object Orientation



This week

We are going to look at object variables:

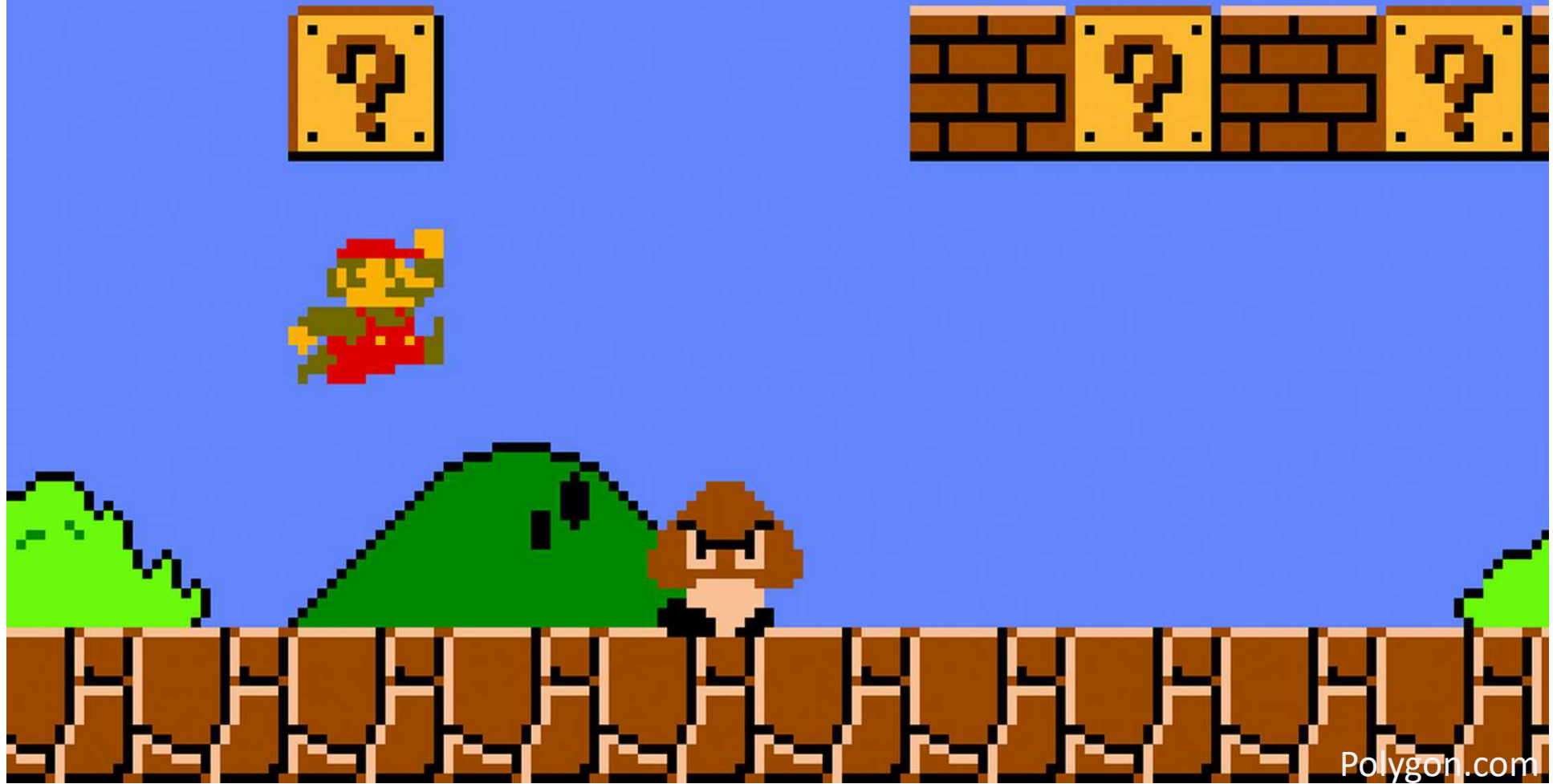
- Introduction to Object Orientation
- Classes and objects
- The Radar() function
- Dot notation and position variables

Introduction to Object Oriented Programming

A 'style' of programming

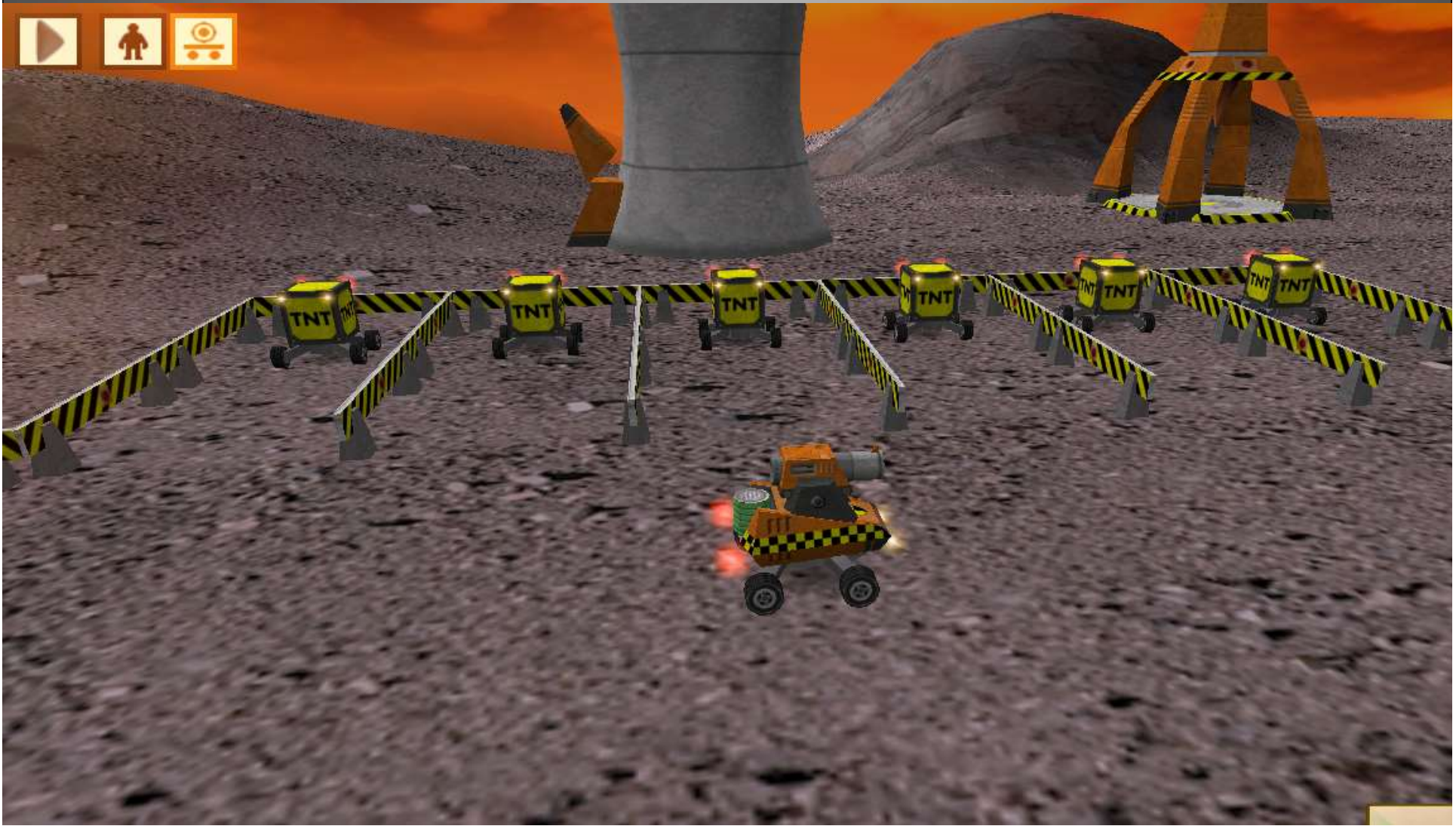


Example of Objects





Example of Objects





Example of Objects



Classes and objects

Modelling situations



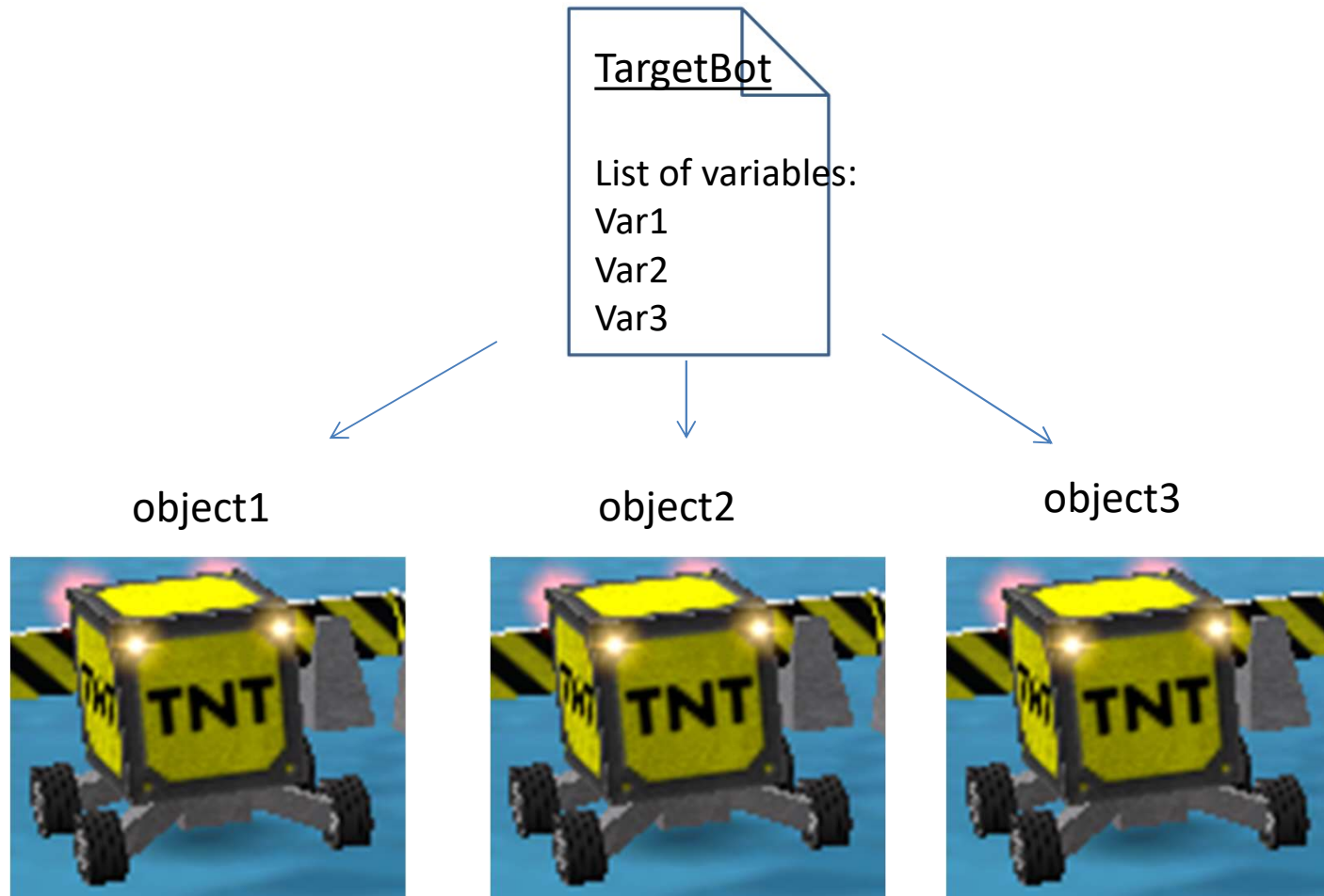
Classes and objects

A class acts a template (structure) from which an object is created

Multiple objects can be made from the same structure, but each object will be unique



Object (instance)



Objects are **unique instances** of a class structure

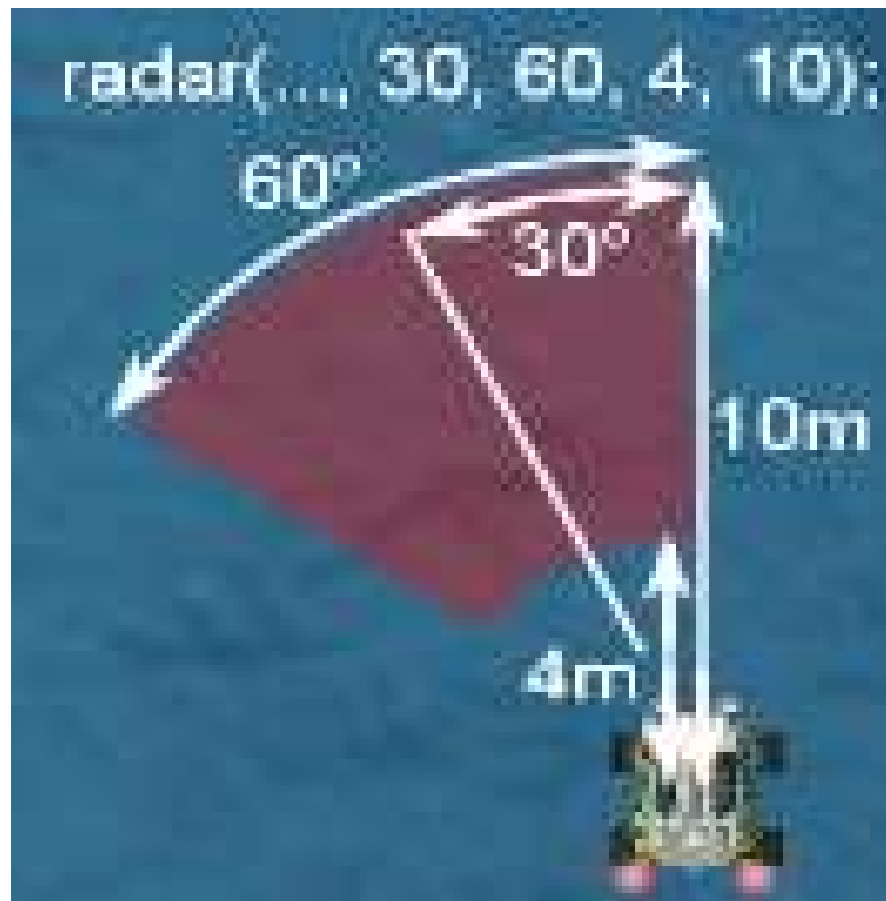
Radar(...)

Finding objects



Example of 'overloading'

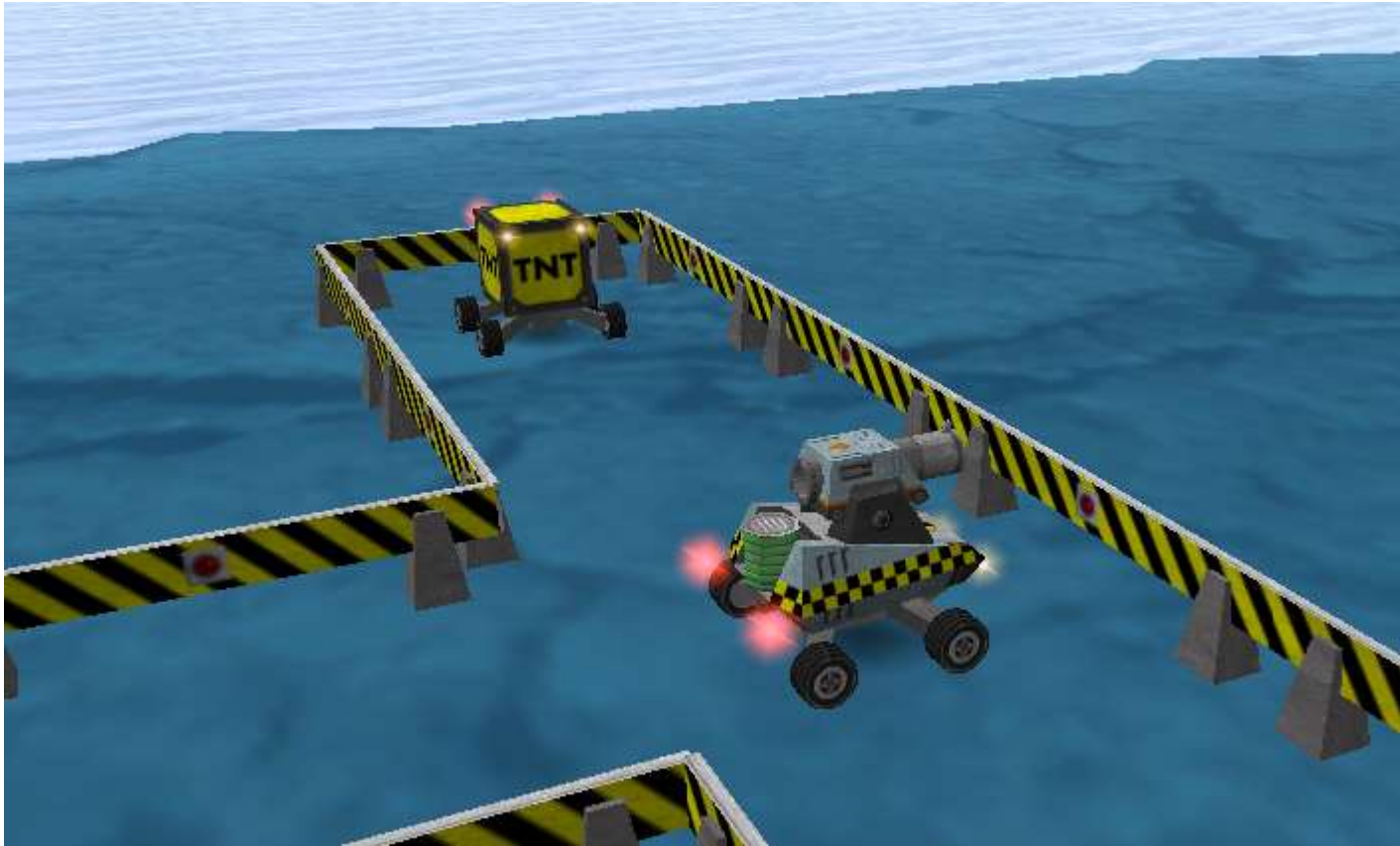
Radar (category, angle, focus, min, max);





Example

Say we wanted to search for the TargetBot using radar



```
extern void object::Flash( )
{
  while ( true )
  {
    if ( energyCell.energyLevel == 0 ) break;
    wait(1);
  }
}

this.category = TargetBot;
this.name = "";
this.position.x = 22.50;
this.position.y = -12.50;
this.position.z = 1.25;
```

TargetBot's code



```
Program Editor  
[File] [Edit] [Save] [Undo] [Cut] [Copy] [Paste] [Print] [SatCom] [Help] [Keyboard]  
extern void object::Task8_2()  
{  
    object TargetB;  
    move(10);  
    TargetB = radar(TargetBot);  
    wait(50);  
}  
  
TargetB.category = TargetBot;  
TargetB.name = "";  
TargetB.position.x = 22.50;  
TargetB.position.y = -12.50;  
TargetB.position.z = 1.25;
```

Our code





The variables are copied

```
this.category = TargetBot;  
this.name = "";  
this.position.x = 22.50;  
this.position.y = -12.50;  
this.position.z = 1.25;
```



TargetB = radar(TargetBot);

```
TargetB.category = TargetBot;  
TargetB.name = "";  
TargetB.position.x = 22.50;  
TargetB.position.y = -12.50;  
TargetB.position.z = 1.25;
```



The (dot) notation

*Referring to variables and
functions within*



. Notation

. is otherwise known as the **‘period caller’**

Refers to variables and functions from objects

`objectName.Var1`

`objectName.Function1`



These variables belong to objects

```
this.category = TargetBot;  
this.name = "";  
this.position.x = 22.50;  
this.position.y = -12.50;  
this.position.z = 1.25;
```



```
TargetB.category = TargetBot;  
TargetB.name = "";  
TargetB.position.x = 22.50;  
TargetB.position.y = -12.50;  
TargetB.position.z = 1.25;
```

