

# Programming Principles

## Unit 10

### Project:

### Robot Chase



**Your Aim**



## What you must do

This enemy robot  
has stolen the  
BlackBox



1. Design a manual Control System
2. Use it to chase the enemy robot



# Basic Task



## Step 1: The control program



Program your  
WingedGrabber to:

- Fly up
- Fly down
- Turn right
- Turn left
- Drive forward

Use the keyboard to control actions  
BUT HOW?



## The keypushed() Instruction

```
if (keypushed(VK_LEFT)) // detect left arrow key
{
    turn(2);                // turn left a bit
}
```

```
if (keypushed("a")) // detect "a" key press
{
    // do something
}
```

Use a selection of these in a repeated loop



# The Program

You will need an infinite loop .. why? .. how?

You need to drive the robot forwards

- **drive(1, 0);** does this at top speed
- then pause very briefly to allow movement

You will also need to use the **jet(..)** instruction

- why? .. how does this work?

Also provide user **instructions**

- this should be in a separate function



## Step 2: Follow the Enemy



Enemy

Test your program to see that you can follow the enemy robot all the way to its secret hiding place

Winged grabber "YOU"



# Extension Work

## Extension Work 1



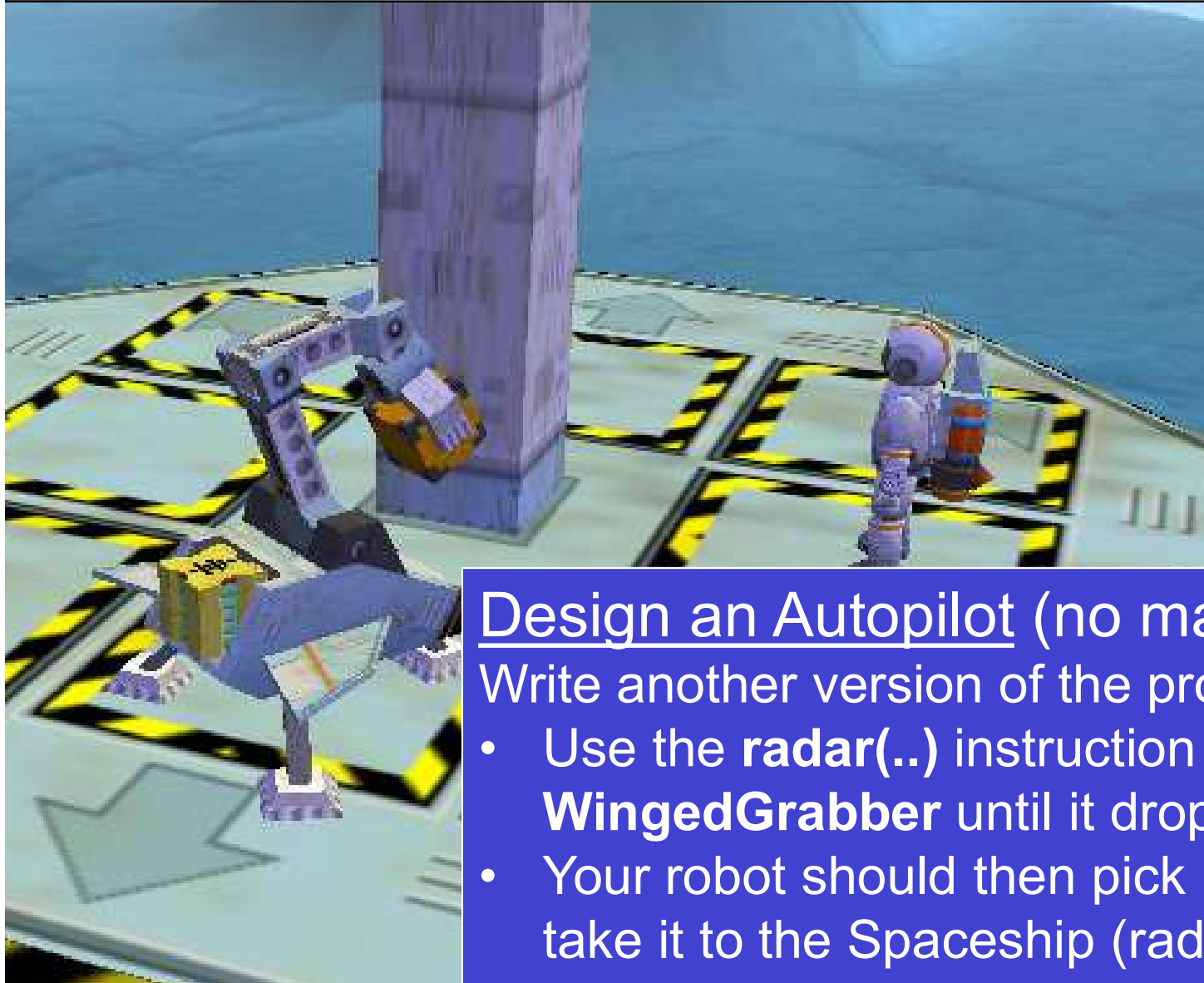
Return the BlackBox to the SpaceShip  
(after the enemy eventually drops the Box)

You need extra controls:

- To grab or drop the BlackBox
- To slow down or stop the forward motion



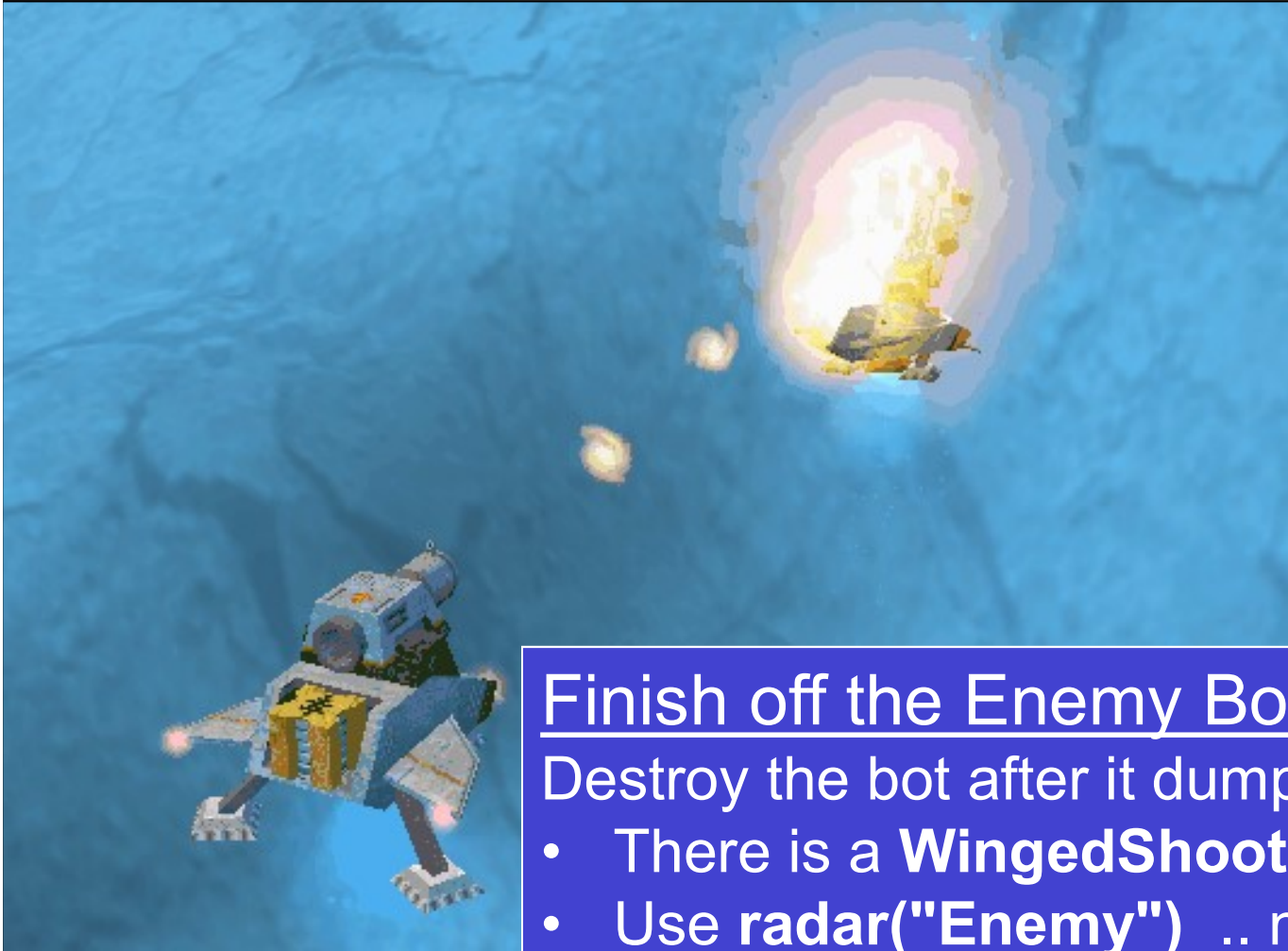
## Extension Work 2



- Design an Autopilot (no manual control)  
Write another version of the program:
- Use the `radar(..)` instruction to follow the **WingedGrabber** until it drops the **BlackBox**
  - Your robot should then pick up the box and take it to the Spaceship (`radar()` again)



## Extension Work 3



### Finish off the Enemy Bot

Destroy the bot after it dumps the BlackBox

- There is a **WingedShooter** to program
- Use `radar("Enemy")` .. not `WingedGrabber`
- Use the z-coordinate to reach the same height before firing



# Deliverables

- Algorithms
- All source code, properly commented
- Test Plans
- Screen shots
- A Report on project progress and problems

