Basic Robotics

History of Robots

- What comes to mind when you hear the word "Robot"?
  - R2D2 and C-3PO from *Star Wars*
  - *The Terminator*
  - *Others*
- *Where did the word "Robot" originate?*
  - *Used in a 1921 play by Karel Capek*
  - *"Robotics" first used by Isaac Asimov in 1941*

What is a Robot?

- A machine that does work on its own, after being programmed by a human
- Examples and Uses

Why Use Robots?

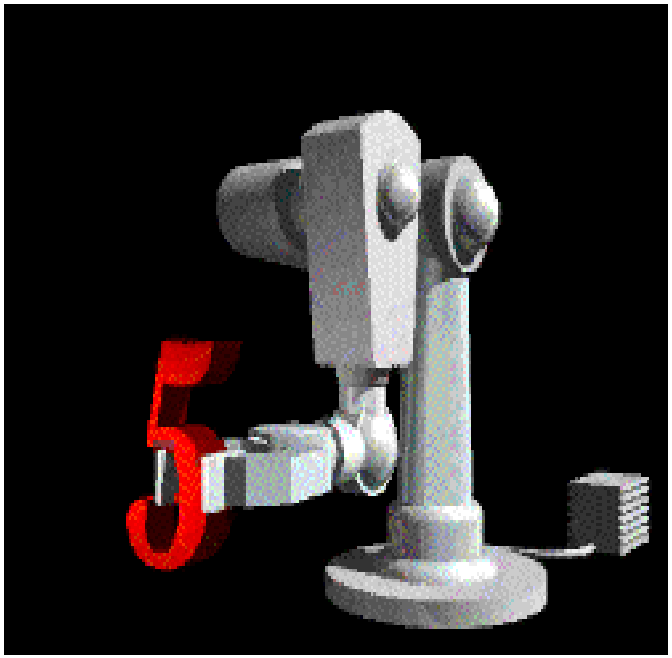
- What are the advantages of using robots?
- What are the disadvantages?

Robot Activity

- Try your hand at guiding a robot to do a simple task

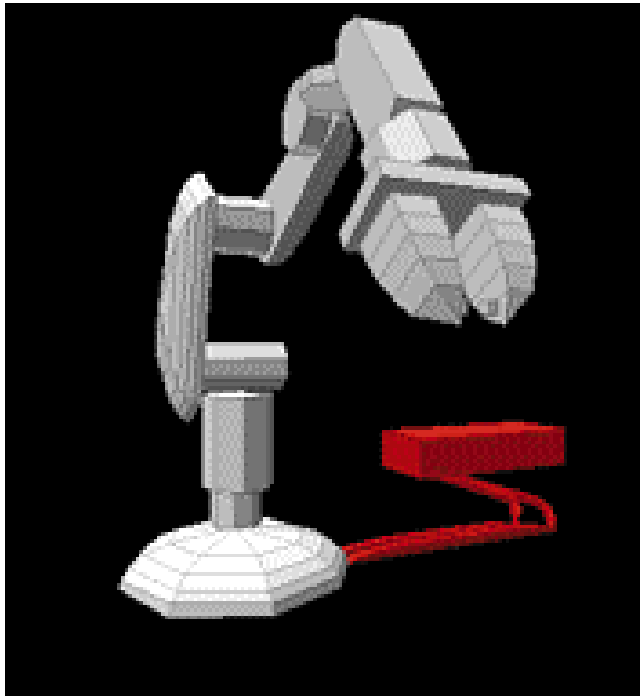
Robot Building Blocks

- Five main parts
  - Controller
  - Sensor
  - Drive
  - Effector
  - Arm



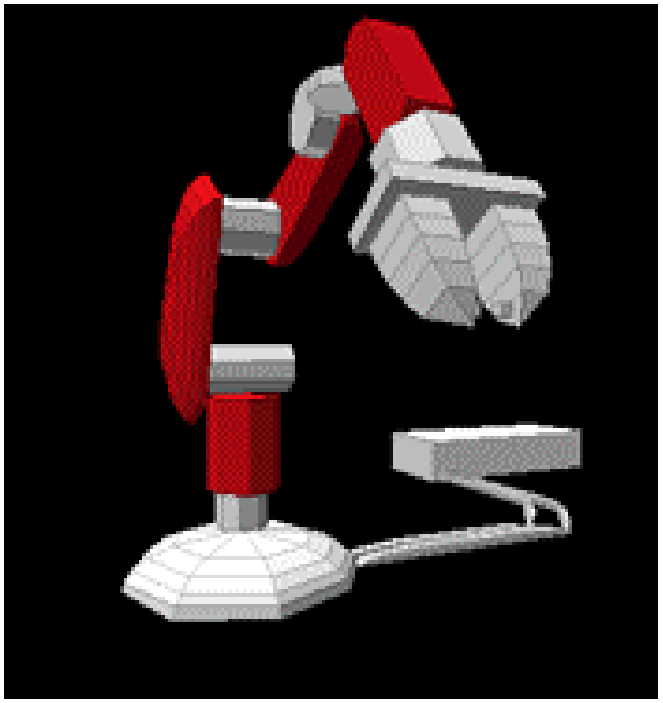
Robot Building Blocks Controller

- Functions as the brain of the robot



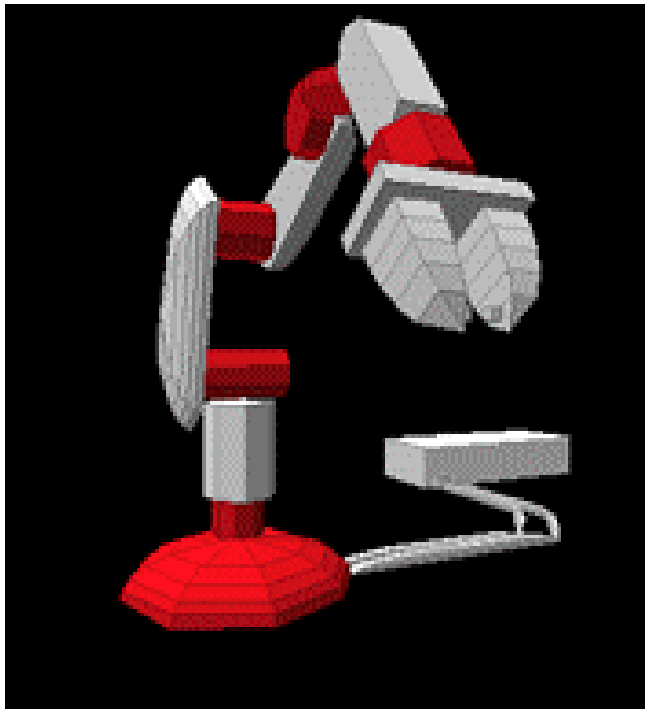
Robot Building Blocks
Arm

- The part of the robot that positions the effector and sensor
- Each joint gives one degree of freedom
- The CanadaArm on the Shuttle has seven degrees of freedom



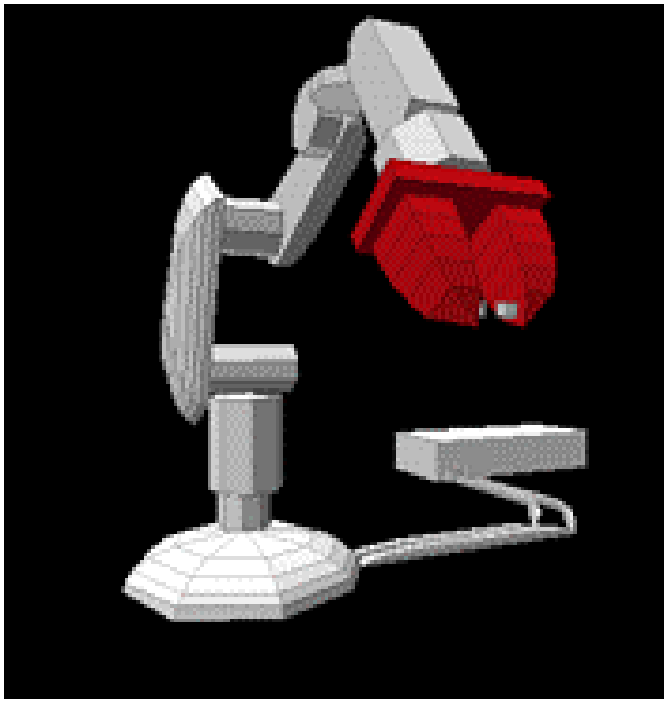
Robot Building Blocks
Drive

- The engine that moves the parts of the robot



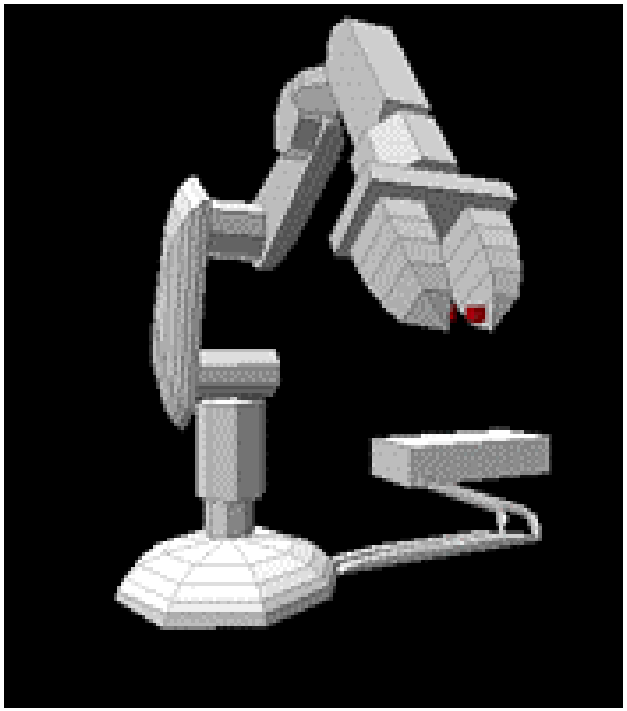
Robot Building Blocks
Effector

- The robot part that does a specific task



Robot Building Blocks
Sensor

- Sends information to the controller about the robot's environment



Robots and Space Exploration

- How can robots be useful in space?