Today

• Finish activity recognition example
• Return to binary scanner: using loops to simplify and generalize our code
• while vs do-while
Short Questions?
Recognizing Crawling Gestures

Crawling assistant robot:

• If the infant’s left hand is far in front and low, then trigger a forward motion
• If the infant’s left hand is far to the side and low, then trigger a right turn

Write a program that recognizes whether we are in one of these situations and “triggers“ and appropriate robot response
While Loops

```java
while(<CONDITION>) {
    <STATEMENTS>
}
```

- If `<CONDITION>` is true:
  - Execute `<STATEMENTS>`
  - Repeat
Back to our Binary to Decimal Converter

Problem:

• Prompt the user to enter a binary number of *arbitrary* length

• When ‘\n’ is received, stop reading the binary number and report the decimal equivalent
  • The book refers to this last character as a “sentinel” – it is a cue to the code that it is done
Considerations

• Can only receive one of three different characters: ‘0’, ‘1’ and ‘\n’
• When we read a number from left to right and can only see part of the number:
  • What is our best guess for the number so far?
  • How do we handle adding one more digit on the right hand side?

For now: only use a while loop (not a do-while)
Do-While Loops

do{
  <STATEMENTS>
} while(<CONDITION>)

• Execute <STATEMENTS>
• If <CONDITION> is true, then repeat
Do-While Loops

• How do do-while loops simplify our binary-to-decimal converter?
Summary

• while() and do-while() loops allow us to repeatedly execute a group of statements
• Make sure that the <CONDITION> is false at some point in time (or else, your program will continue forever)
• Often use a counter of some form to determine when to stop (but not always)
• Always check: your first case and your last case (this will cover a large number of bugs)
Wrap Up

Coming up:
• HW 2: due Friday
• HW 3: due next Wednesday
• Exam 1: Sept 15

Next time:
• Methods