

# Build Systems



Q: What is a Build System?

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Q: Who has used a one?

# Make, the Grandbinary of them all

- Automate compiling and linking
- Easily repeat long/complex commands
- Eliminate unnecessary work

Make syntax  
(in 2 lines or less)

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(in 2 lines or less)

```
target: dependencies  
      rules
```

# Let's Makefile!

- Build a sentence
  - Subject
  - Verb
  - Object

# Other build systems



# Other build systems

## make-based

- GNU make
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- Bazel (Google's tool)
- Buck (Facebook's tool)
- MSBuild (Microsoft's tool)
- xcodebuild (Apple's tool)
- ...

# Other build systems

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## Other languages for scripting and building

- Rake (ruby)
- Apache Ant (Java + XML)
- A-A-P (python)
- sbt (Scala)
- ...

# Why stop at compilation?

What else could we automate?

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What else could we automate?

- Build script generation
- Installation
- Testing
- Continuous Integration (CI)

# Closing remarks

- **New section!!**
- Max points from Advanced Exercises in 3 or more sections
- Reminder: You must submit to staff at OH