

Learning objectives

3. The entirety of the Entach project from beginning to present
1. Engineering process
2. RobotC all features

Breaking into manageable chunks

The Engineering Process - Gearbox (with Roger)

- Don't mention the gearbox directly
 - Identify the need - a system that could lift with speed & torque
 - Describe - requirements and constraints
 - Generate - C-sketching, brainstorming, organization
 - Embodiment - Detailed sketch on paper, CAD? ← private lessons
 - Finalize - Detailed explanation in engineering notebook

RobotC all features

- Bluetooth - good for development & testing
- Walkthrough of GUI
- Header files
- Adding sensors
- MUX
- Object Oriented programming

Teach away from code at first

- Model a robot in terms of OOP
 - has-a, is-a, actions, properties
 - composition inheritance methods datatypes

Write code for RG-4

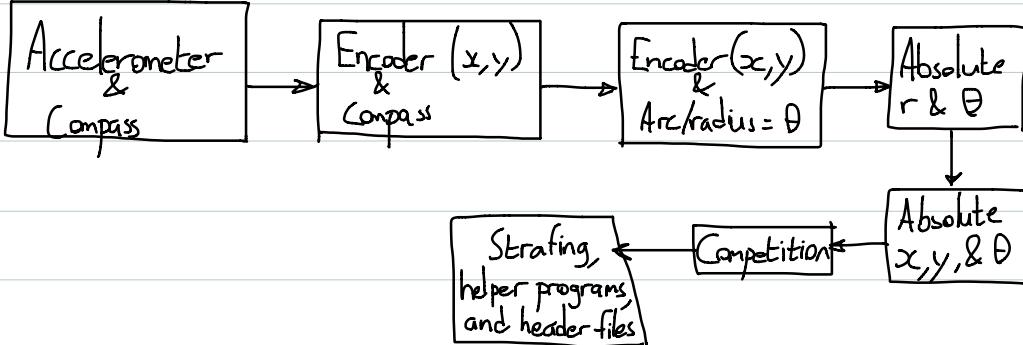
- Program it's actions + properties
- Write out what it has & is
- COMMENTING

Entach

Engineering aspect - critique the code & my process

- The situation - Our autonoms consisted of wait times
- Need - a program/thing that could guide our robot to a fix
- Describe - Research - have them do the research on sensors point on the field
- Generate I did
 - Concept generation - None, "done in research..."
 - Selection - Encoder (compass at first) were only good sensors
- Embodiment
 - Look at the code and critique it
 - Tell them to try and figure out what code is doing
 - ~~Then, tell them what I was trying to do~~
 - How would they make it better?
 - Keep doing this until present day

- Phases



Unit 1: The Engineering Method *Lessons don't correspond to days

Lesson 1: Course purpose, Unit overview, expectations

Introduce engineering method

Lesson 2: Walkthrough what will happen during each stage of the E method, Introduce Lifter project

Lesson 3: Identify need

Lesson 4: Describe the need

Lesson 5: Generate

Lesson 6: Draw design on paper / somewhere \Rightarrow generate materials list

Lesson 7: Building it!

Lesson 8: Summary of design in engineering notebook

Unit 2: RobotC and basic object-oriented programming

Lesson 1: What is OOP? Why do we need it? What are we going to be doing

With it? \leftarrow programming your creation from unit 1

importance of commenting
(show Carlton's TelOp program)

Lesson 2: Model everyday objects in terms of OOP

Lesson 3: Model this year's robot in terms of OOP

- turn these into classes,
methods, properties

Lesson 4: Model your unit 1 creation

Lesson 5: Walkthrough of GUI, My program template, and Bluetooth testing

Lesson 6: All about sensors

Lesson 7: Program it!

Unit 3: Entach

Lesson 1: Entach in the lens of "Identify"

Lesson 2: How de-code a program + why I'm not saying what I did (boring +)

Lesson 3: De-code the programs from each phase of Entach look deep into code

Lesson 4: What's next for Entach? You decide