Comparison and Recommendation Report: Calculating Arctangent
Writing assignments in 2031 have the following components:

- Lecture, covering the basic structure of the assignment
- Assignment sheet, giving specific assignment requirements
- Template, providing correct formatting
- Evaluation sheet, showing how the assignment will be scored

In addition, the first writing assignment has a mandatory consultation with your GTA

- The purpose of the consultation is to review a complete draft of your report to give you feedback on its content and organization
- You will get very little from it if you do not have a draft to go over
In labs 7 and 8, you will be designing a simple processor called SCOMP.

For the final project, you will use SCOMP to control a simple robot.

Traditionally, moving the robot to an \((X,Y)\) coordinate requires moving parallel to the axes.

Calculating an arctangent would allow the robot to turn directly towards a destination.

You will be implementing this calculation as part of your final project.
The DE2Bot
Writing Assignment Topic

- You will be comparing some possible methods of calculating an arctangent, and making a recommendation of which design to pursue.

- There is no right or wrong answer, so you need to explain your process and justify your decision.

- We will provide enough information to get you started, but you will need to do some investigation of your own, as well as some critical thinking.
Relation to Proposal

- Near the beginning of the final project, you will write a proposal covering your team’s intended design.
- Consider this document a precursor to that:
  - Before you (and your team) can decide what to propose, you need to compare the options and choose the best one.
- Being thorough now will reduce the amount of time spent investigating options later.
Sections of Your Report

- **Executive Summary**: summary of entire report
- **Introduction**: background information
- **Comparison and Analysis**: discussion of the options
- **Recommendation**: which design you recommend pursuing and why
- **Works Cited** and **Appendices** (optional)
Executive Summary

- An Executive Summary is the entire paper in one or two paragraphs
  - Intended for people who don’t need all the small details of the full report
  - This is not a teaser – your results and conclusions are all summarized up front
- You can’t summarize your paper if you haven’t written it. Write the ES last!
Introduction

- Begin by providing context (one paragraph)
  - Start with big picture, then move into the specific examples being compared.
- Have an explicit purpose statement
  - What is being compared and why (example: “to choose the most effective design based on memory utilization, design time, [etc.]”).
- Provide any necessary background (briefly)
  - e.g. theory behind Taylor series of arctangent, basic format of lookup tables, the bases for comparison, SCOMP’s architecture, etc.
Comparison and Analysis

• Analyze the design options and explain how each one would affect the final implementation
  o Some example criteria are in the assignment sheet

• You will need to apply your findings to SCOMP and the DE2Bot
  o Everything should be specific to SCOMP and the DE2Bot; these design options might have different effects in other architectures or systems, and that is not of interest here

• Don’t make any better/worse judgments here. Just state the facts
Recommendation

- Make your recommendation of which design to pursue based on how the information from the previous section applies to the intended application (controlling the robot)
- Explain how the pros and cons of each option affect the SCOMP/robot product, and how important those effects are
- Remember: there is no right or wrong answer. You must justify your decision for it to be taken seriously
Works Cited and Appendices

- Information that you take from other sources must be cited
  - Avoid simply quoting the source. Re-interpret the information and apply it to your specific report
  - If you do need to quote the source, it must be a direct, word-for-word quote, because you didn’t write it

- Information that is too long or detailed for the report body should be in an appendix
  - It must still be relevant and useful
  - Appendices are not just a dumping ground for all your research