# Proposal Worksheet

Number of Group members: 1

Name of member: Enrique Penaloza

## Audience

I am one of Doctor's Eyles students in CRN 18005 that study the fundamental concepts of Algorithm Analysis. As our time nears the end of the course, we are required to present a topic that covers fundamental concepts of algorithm analysis including the introduction of formal techniques and the underlying mathematical theory. My proposed topic would be to present the different sorting algorithms in our classroom to the enlisted students in our class (CS 4306: Algorithm Analysis) and the teacher himself.

## Subject

It will be a research proposal for a study to inform the class and myself on the different programming sorting algorithm's efficiency and sequence approach on organizing data that was touched upon in class.

## Problem or opportunity

One of our learning outcomes for the class is to demonstrate the understanding of different algorithm design techniques. For my proposal, I want to propose a research project to demonstrate the different algorithm design techniques in data when it comes to sorting algorithms.

Our class is full of seniors that are bound to graduate this semester (including me) and it would be beneficial to not only them but also the upcoming juniors to use two coding interview questions that demonstration the understanding of which sorting algorithm is appropriate to tackle that certain problem.

## Purpose

The purpose of this proposal is to inform and present the different algorithm design techniques on sorting algorithms. With

students on the subject to graduating this semester (including me), it would be appropriate to present this necessary information that would be helpful when they will have to answer similar problems on job interviews.

## Research

If you choose to accept this proposal I plan on beginning on the 24th of March. On the image below, is the proposed schedule to complete the research project.

| Tasks | Date of Tasks (by section of time frame) | | | | |
|---|---|---|---|---|---|
| Task 1: Write the proposal | | | | | |
| Task 2: Rough Draft Complete | | | | | |
| Task 3: Research Paper Complete | | | | | |
| Task 4: Presentation PowerPoint for class complete. | | | | | |
| Task 5: Submit research | | | | | |
| | | | | | |
| **Start:** | 3/17/17 | 3/24/17 | 4/2/17 | 4/5/17 | 4/7/17 |
| **Projected to Finish:** | 3/19/17 | 4/1/17 | 4/5/17 | 4/7/17 | 4/7/17 |

The layout on the proposed research will include

- History and timeline of the introduction and improvements on the sorting algorithms we discussed in class
- Depth analysis (with C++ coding followed by an example) on
  - Insertion sort algorithm (simple sort)
  - Merge sort algorithm (efficient sort)
  - Quick sort algorithm (efficient sort)
  - Bubble sort algorithm (bubble sort)
  - Bucket sort algorithm (distribution sort)
- Two interview questions that are used in real life interview
  - Are designed to test interviewers if they know computer science fundamentals in sorting algorithm.
- Conclusion
- List of references.

As for the presentation, the presentation will include:

- Timeline of all algorithms when they were introduced (2 minutes)
- Analysis on all algorithms (3 minutes)
    - How they sort information
    - Worst case scenarios
    - Software technology they are used for
- Upload my pre-made coding portion followed with a question to demonstrate the train of thought on how I choose and why I used that sorting algorithm with the code to follow along (4-5 minutes).

**Budget**

The research project will inquire no funding to complete. All of the resources to conduct this study is available on the Kennesaw State Library website.

**Reference**

GPU-ArraySort: A Parallel, In-Place Algorithm for Sorting Large Number of Arrays. (2016). 2016 45th International Conference on Parallel Processing Workshops (ICPPW), Parallel Processing Workshops (ICPPW), 2016 45th International Conference on, Parallel Processing Workshops (ICPPW), 2012 41st International Conference on, 78. doi:10.1109/ICPPW.2016.27

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Mapping sorting algorithm. (2016). 2016 SAI Computing Conference (SAI), SAI Computing Conference (SAI), 2016, 488. doi:10.1109/SAI.2016.7556025

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