

# SWE315 : “C++ Programming”.

## Final Project

The final project comprises 35% of your course grade: Please pay attention to the below! More importantly than the grade itself, this is your opportunity to demonstrate independent learning, creativity, and have fun with ‘C++’. Use this opportunity wisely! Do something you like!

You will have more than 6 weeks (in words: SIX weeks) to complete the project. We will also spend time in labs and lectures to discuss related stuff.

Below are the technical details. Keep in mind: The goal is to learn while being engaged. Do a project you would like to see working and have fun doing it !!

## Details

1. The project is individual (no teams). However, it is ok to have two projects related.
  - a. If done as related, please specify who is responsible to what part and where the interface is. (e.g., graphics, program, file I/O, etc).
2. Submit by **July-22nd** (by email to instructor) project-selected and any cross dependencies on other projects.
3. Every **Thursday** we will have a short brief by each team on Project status.
4. Final results of the project are:
  - a. **Working program.**
  - b. **Presentation** (less than 10 minutes) with slides.
  - c. **Project report** (including printout of the program, as appendix).
5. Final presentation of the project is on **Aug-26th, Tuesday** and **Aug-28th, Thursday**, during class. (Project week).
6. Project should include (note: Very minimal list. You have freedom here!):
  - a. Demonstrates the use of OOP principals.
  - b. Demonstrates Arrays ( and pointers if relevant).
7. All project materials (presentation-slides, report (hard copy), programs) should be submitted no later than **Aug-30th, Thursday**

## Rubric used:

| Date: Mar-03-2014  |   |   |   |   |
|--|---|---|---|---|
| <b>PLO3:</b>   |   |   |   |   |
| <b>Analyze engineering problems and resolve them using appropriate design steps and processes.</b>   |   |   |   |   |
| Notes:   |   |   |   |   |
| 1. In this PLO, the student is given an open-ended problem specification, and a large part of the process is finding the right questions to be answered, and methodology of arriving and pursuing those. |   |   |   |   |
| 2. This PLO refers to BOTH engineering-problems AND art-productions.   |   |   |   |   |
| 3. NOT all items will be relevant for each specific assignment.  |   |   |   |   |
|  | <b>Initial<br/>(Comprehension)</b>  | <b>Emerging<br/>(Application)</b>   | <b>Developed -I<br/>(Analysis)</b>  | <b>Developed-II<br/>(Synthesis/Evaluation)</b>  |
| <b>Problem understanding</b>   | Discusses the importance of developing a clear understanding of a problem.                                  | Applies best practices to rephrase the problem in a simpler and more direct manner.     | Analyses various aspects of the task and draws on previous experience to attain a clear understanding and formulation of the problem. | Synthesizes the components of the task and suggests possible extensions to the task.  |
| <b>Alternative approaches for solution</b>   | Describes why approaching a solution from multiple vantage points can yield tradeoffs in solution.          | Applies various approaches to finding a solution.                                       | Analyses different approaches to a solution to determine viability and tradeoffs.   | Evaluates multiple approaches to a solution and selects the most viable option.       |
| <b>Reduction to specifications</b>   | Describes the importance of adhering to specification and constraints for a given project.                  | Adheres to specified specifications and constraints when working on a specific project. | Analyses specifications and constraints to determine the most effective way to complete a given project.                              | Creates new specifications that expand the scope of the project.                      |
| <b>Iterative process</b>   | Able to discuss the importance of applying an iterative (refining) process in solving engineering problems. | Applies iterative process in solving a problem.   | Analyses the progression of the iterative process to determine which elements need more refinement.                                   | Synthesize previous iterations to create the most appropriate final product/solution. |

## Example project ideas:

- Image processing enhancements:
  - ASCII art
  - Mosaics
- Audio processing library
- Handling Maya (ascii format) files : Macro, editing, counting, etc. Nodes with comments, etc.
- Handling Nuke files: See above.
- Mine-sweeper : ASCII graphics.
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- Sudoku: 3x3, (extra credit: 4x4).
- Crossword puzzle
- Chess board with various games on it:
  - Knights tour
  - 8 Queens
  - Checkers
- < Your idea here >

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