Guide for Writing Project Proposals

This is a summary of how to write good, concise proposals for course projects. The focus of this summary is on programming or implementation projects, but the general ideas can be applied to most proposals. The recommended lengths of sections are given assuming a document length of 2 to 5 pages. Use appropriate scaling for longer proposal documents.

Sample Outline

The following is a sample outline for a project proposal. Note that all questions for a section may not apply to your proposal, and should be used as a general guide only.

1. Introduction (1 or 2 paragraphs)
   - Motivation Sentence
   - Summarize the problem (1 or 2 sentences)
     Summarize the solution (1 or 2 sentences)
   - Describe format of rest of proposal (sections, etc.)

2. Motivation (1 to 3 paragraphs)
   - What is the history of the problem? Why is this problem interesting?
   - When and why does the problem occur?
   - Is the problem already solved? What is done now?
   - Are there any similar systems or solutions to the one you propose? If so, reference and very briefly explain them.
   - Are there are possible improvements to current solutions?

3. Project Summary (1 paragraph)
   - What in general will this project achieve? (Do not delve into details or timelines.)

4. Project Details
   - *Architecture and Environment (2-3* paragraphs + figures)
     - Describe the project environment (software, hardware, languages, organizations, etc.)
     - Diagrams and figures are useful here if appropriate.
     - What software, hardware, or tools will you use?

   Implementation Issues and Challenges (2-3 paragraphs)
     - What will be the most difficult issues and challenges in the implementation? • How are you using or extending current tools/systems for your problem?
     - What makes your project unique?

   DeliveNables (3-5 paragraphs - point-form may be used for some of the description)
     - What will the project produce? (program, report, etc.)
     - Describe in relative detail the features of each of the project's products.
     - You may wish to separate deliverables into phases and indicate optional components given time.
     - Emphasize what your project contributes or achieves!

   Timeline (1 paragraph - point-form is suitable)
     - Provide an estimated timeline of project deliverables and important dates.

5. Conclusion (1 paragraph)
   Summarize the project including the problem, motivation, and proposed solution, and re-state important (planned) contributions.

6. References

Technical Writing Tips

The Basics

KISS - Keep It Simple and Short
- Remove redundant words and phrases from sentences.
- Do not repeat yourself.
- Avoid colorful language and adjectives.

Lead the Reader

- Direct the reader through your text using subtle or not-so subtle guides.
- Paragraphs should "flow" together in text.
- A paragraph should have an opening sentence representative of its general contents and often have a closing sentence to summarize the paragraph discussion.
- Organize your presentation into sections such as introduction, motivation, background, topic related sections, and conclusion.
- Try to avoid directly referring to the reader such as "Let us examine ..." or "As you will see..."

Be Intelligent but not Too Smart

- Use more technical and descriptive words whenever appropriate, but do not use a thesaurus just to look "smarter".

Use Bold and Italics Productively

- Bold and italics are intended to draw a readers attention, so do not abuse them.

- Use bold/italics for definitions or important words in text. Example: "An *object* consists of attributes and methods."
- Underline is rarely used.

General Tips and Common Mistakes

- Unnecessary Capitalization - Do not capitalize terms in sentence unless they are proper names.

- "Because ..." - Do not start a sentence with because. Re-arrange your sentence so because is not needed or substitute "Since ..." or "Due to ...".

- Avoid Abbreviations - Do not use abbreviations such as "let's" (let us) and "that's" (that is). • Avoid Self-References - If possible, do not use "I" in the text. Change the sentence to avoid a self-reference or substitute "we" if appropriate.

- Dangling "This" - Do not abuse "this" to substitute for a topic in discussion. "For example, this is a bad situation because the sentence is ambiguous." Replace "this" with the item being described such as "Using the word 'this' inappropriately results in a bad situation because the sentence may be ambiguous."

- Define Before Use - For terms and abbreviations, please defme before use (DBU). Otherwise, the reader may not understand the concept or abbreviation if you do not DBU.

- New Paragraphs - As a general rule, split larger paragraphs into two or more paragraphs if the topics describe are sufficiently distinct.

- "Further" Instead of "Also" - Replace "Further" with "Also" to start a sentence. • Be Consistent with Terms - If you defme a term, abbreviation, or proper name, be consistent in its spelling, use, and capitalization throughout the text.

- Dangling Headers - Do not have text headers end a page followed by no text. Similarly, try to avoid lines of text with only one or two words at the end of a paragraph.

- Title Capitalization Rule - Headings should be capitalized (i.e., nouns, verbs, and all other words except articles, prepositions, and conjunctions should be set with an initial capital) and should, with the exception of the title, be aligned to the left. Words joined by a hyphen are subject to a special rule. If the first word can stand alone, the second word should be capitalized. Here are some examples of headings: "Criteria to Disprove Context-Freeness of Collage Languages", "On Correcting the Intrusion of Tracing Non-deterministic Programs by Software", "A User-Friendly and Extendable Data Distribution System", "Multi-flip Networks: Parallelizing GenSAT".

- 'An' versus 'A':
    - Mnemonics such as XML requires the article'an'. *Example: an* XML document ₒ
    - Words beginning with'u' require the article'a': *Example:* a unique or a unified approach

- 'That' versus 'Which' -'That' should be preferentially used instead of 'which'.