SEVERAL RECOMMENDATIONS FOR STUDENT'S DIPLOMA PROJECTS

The diploma project is a preparing experience, and it is supposed to give some hints about working in a full time, real life environment. The *diploma project* consists in two parts, the *specifications* of the project (the document or simply the *project*) and the *application.*

General Recommendations for Students

Allocate the necessary amount of time. Devote yourself to the project, as this experience is supposed to be about real life work, use your time and also do not abuse, try to work constantly only 8 hours per day for the project, in this way there is enough time for other activities. Take care of your sleep too. Don't forget, there is a presentation too, Try to finish all the things one week before the deadline of the project to have time to focus on the presentation. Also repeat several times the presentation, with some audience too, this gives you self-confidence during the real presentation.

Divide the whole project working time into stages: documentation and learning new things, writing the project and working for the application. These stages can alternate during the same day, or with a larger periodicity, any way it is good to have a diversified work. Therefore, do not document for one month, work for the application in another month and write during another month.

Learn something new. A new programming language, or new design skills could be a real reward after the project experience.

Interact with your supervisor. Keep an active communication with your supervisor. Informing about your progress helps you to organize your work and to feel your real progress.

Enjoy your work! Facing your work with a good mood things are coming easier and the work results are better.

The Structure of the Project

A project consists in three main parts, introduction, content and concluding remarks. It is good to write first the structure (the content) on paper as a sketch, and only after that, use the computer.

The Introduction should give the context of the project, the connection with existing work in the field, and some motivation about working to the project in the way you are planning. As the introduction is related with exiting work, it is a good idea to write in parallel the Bibliography too. Use references like this one [1]. As this part is just an introduction, 10% from the number of pages of the whole project should be enough.

After the introduction it would be good to exist a work plan diagram, with intended working hours per components, milestones, tests, etc.

The content should be about how you developed the application. There are so many things to be said. Take the components described in the work plan and give details about each one. Talk about modules, procedures, interfaces, UML diagrams, parameter

transfer, database structure, relations, fields, constrains, algorithms, prepared tests and debugging for each component, running examples for the whole application, results, packages, installation, etc. As the content is the most important part of the project (85%-90%), it is a good idea to put the things in several well balanced chapters.

You can have also some annexes with the code for the most important algorithms (several pages, no more) .

Concluding remarks should emphasize the original aspects of the project, some technical data about the application (number of modules, languages, number of lines) and it would be good to present the effective work diagram, showing and explaining the differences from the initial planning. This part should not exceed two or three pages.

Special notes about the title.

- The title should be short, and complete, just tell what is the project about.
- Do not mention in the title the technology used, focus on what you have done.
- Avoid using "and" in the title, for simplicity reasons and to show that you were focused on only one aspect.
- Do not use acronyms in the title, everybody should understand what is the project about. Acronyms should be explained and it is a good practice to explain where the acronym is coming from the first time when we use them. Therefore acronyms in the title are not a good solution.

More General Aspects about the Project

During the project it is recommended to use mostly the present tense. Also, we use the pronoun "we" instead of "I" meaning the writer and the reader altogether. To emphasize the following aspects we present them as a list.

- *Title case* for titles (chapters and subsections);
- *Refer the References*. All items of bibliography should be referred somewhere in the project. The same for figures, although there is a caption, there should be some part of text explaining what is the figure about.
- Do not worry about typographical aspects. Write the content of the project using *consistent styles*, marking the paragraphs with the appropriate style, headings, lists, captions, etc. As a benefit, you can get the content automatically (look for TOC, Table of Content).
- *Keep the structure simple*. No more than 2 levels of headings are needed, heading 1 for titles of chapters, heading 2 for titles of subsections. Things can be organized in this way, either promoting heading 3 titles to heading 2, or make more chapters.
- *Do not forget about the presentation*. One ore two slides per minute should be enough. Is not nice to have only text on slides. Also only pictures can make you forget about the things you were intending to present and this can increase the level of emotions too. Best slides have pictures together with some bullets of text, gradually introduced. After the slide presenting the title of the project, the author, the presentation date, make a slide with the outline of the presentation. Follow the structure of the project for the presentation too.

Originality

The application and the project are representing and presenting yourself. During the project time you might discover that writing is difficult and goes much slower than expected. Therefore allocate enough time for all steps in the project.

Several things *not recommended*:

- Copy and paste (from other resources that are not belonging to yourself) is not allowed, not even for one sentence in your work. To discourage the plagiarism, Google can help, after all everybody has access to public resources. If you feel that you need to cite some things, use quotes, specify the author, take care, for some sources you might need the approval of the author.
- Diploma projects are not compilations, essays or state of the art about some topic. Diploma projects are neither user manual, nor notes about configuration or just using some technology. They present your work, what you can do and your real capabilities.

Complexity

As you are expected to work full time during several months, the required amount of time could be computed easily. Say that there are 4 months, 25 working days per month, 8 hours per day, this gives an impressive amount of 800 hours per project. It would be good to allocate a quarter for documentation and learning new things, a quarter for writing the project, checking, tests and presentation, and half of the time for the application itself. These are several things to keep in mind when allocating time. An application with a socket and some database communication can be done in one day. Writing the project can take one day for only three pages.

Evaluation

This section is about self evaluation. It is about how you enjoyed the work, new things that you learned and what you could have done more. If you follow the lines of these recommendations you can finish having a good project. The mark you receive after the presentation is important, but after all, you discover some things and this is the most important fact. And take care, projects can always be improved, polished, rearranged, reformulated, take care, there is a deadline too.

A final advice. After finishing the project, if you still have a bit of time, it is a good idea to look over the code once again, and to put comments on every line. This gives you a good feeling, not to mention that you might find some bugs too.

Bibliography

[1] Some Author, *The Title of the Paper*, more information, Publisher, Proceedings, Year, Pages

Annex

Several project proposals

Next there are only several hints about possible research directions or just key words, you can come up with your own ideas too.

- Graphical Editors, Compilers, Decompilers, Invented Languages, or only subsets of existing languages, Page Description Languages, Action Script, etc.
- Intelligent Data Analysis and Interpretation, Model Identification, Forecasting, Multi-agent Environments, Simulations.
- Experiments about Learning, e-Learning, Learning Automata, etc.
- Natural Language Processing, Measuring the Readability of Written Documents, Multilingual Syntactic Analysis and Ambiguity, Measuring the Percentage of Plagiarism of Documents, Processing Written Documents Base on Textual Representations and Transformations / Entities Relationships, Auto-summarizing, Anaphora Solving.