**Please use this template for your report – this is the title**

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Configurable Electronics

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**ABSTRACT**

Please use this document as a template for your report. Reports are expected to be between 6 pages (minimum) and 12 pages (normal maximum) in length but the grade is not proportional to length! This template is written in English, but you are free to write the report in Portuguese. Content and formatting details are given below, and should be carefully read and followed (presentation is an evaluation criteria). In this abstract, provide a summary of the report’s content, without figures or tables, with a maximum of 200 words.

**1. INTRODUCTION**

In this section, provide a high-level description of the work developed. The description should not include implementation details - this section is supposed to be an introduction of the work so you should use a language that everyone can understand. Also it should introduce the work as a whole, so you should probably write this section at the end of homework 3.

The last paragraph of introduction should summarize what can be found in each of the report sections.

Across the report, you should not forget the general rules described next. All figures must be referenced and explained. Position figures and tables immediately after the paragraph where they are first mention in the text (never start a section with a figure!). To mention a figure or table use the abbreviation “Fig. 1” or the full word “Table 1” in a sentence. Besides being mentioned in the text, figures and tables must be explained to the reader. Figure captions should be centered below the figures; table captions should be centered above.

**Table 1.** *Table Caption.*

TABLE here

IMAGE or DIAGRAM here

**Figure 1.** *Long caption format.*

Each paragraph should be used to develop an idea. Therefore it should start with a sentence that summarizes the idea, followed by other sentences developing that idea. At least 2 or 3 sentences should be used to develop an idea. The golden rule is: if you are struggling to explain something in one sentence, you should divide it in two sentences. The final sentence should provide a strong closing for the idea developed previously, in a way that if one reads only the first and final sentences in the paragraph, it is still possible to grasp the idea. It is thus not acceptable to use single sentences as paragraphs.

Across the report, number citations consecutively in square brackets [1]. Punctuation follows the bracket [2]. Refer simply to the reference number, as in [3]. Use “Ref. [3]” or Reference [3]” at the beginning of a sentence: “Reference [3] was the first …”. Also, define abbreviations and acronyms the first time they are used in the text, even if they have been defined in the abstract.

**3. Circuit Architecture**

You should describe the architecture of your circuit and its main building blocks. Explain its operation based on the simulation results. Waveforms must be included in the final report and all possible signals visualized in order to explain the functionality of each circuit’s modules.

Use different paragraphs to address different subjects. Keep the focus in the most relevant information, avoiding the description of small and irrelevant details. Information should be synthetized in tables and figures, and properly discussed – do not provide raw information without your analysis and interpretation! It is important to know your opinion on results and not the results themselves.

You are free to use sub-sections in order to better organize your results and discussions. Sub-sections should follow the rules described below.

*2.1 Subheading*

You can also use itemized lists whenever you feel useful, using the following template:

* *Item title.* Text
* *Item title.* Text
* *Item title.* Text

*2.2 Subheading*

Paragraph text. Use as many subheadings as required for your report.

**2. Synthesis and Implementation**

In this section you should discuss the impact of different synthesis and implementation options. Also you should identify critical paths, find the maximum clock frequency and comment the effect of filter pipelining in the overall circuit performance. Again, you are free to use sub-sections in order to better organize your results and discussions.

**4. Intellectual Property Integration**

In this section, discuss how you packaged you design and integrated with an IP from the catalog. You should describe the IP and explain the impact of different IP parameterization choices in both implementation area and performance.

**5. CONCLUSIONS**

Present **your** conclusions (not a summary of the report). Also provide some ideas of what could have need done to make this work more interesting.

**Acknowledgements:** This section includes as many paragraphs as students in the group. In each paragraph the student should describe his contribution to the work presented. Language should be direct and clear about who did what.

**REFERENCES**

(Only essential references which are directly used in the text should be included in the reference list. The references should be listed in numerical order, as they are used along the report)

[1] Vipin Lal (2017), [VHDL code for a Dual Port RAM with Testbench](http://vhdlguru.blogspot.pt/2017/11/vhdl-code-for-dual-port-ram-with.html), VHDL coding tips and tricks. [Online]. Available: http://vhdlguru.blogspot.pt/. [Accessed: 27- Nov- 2017]

[2] Yunde Shi (2010), PACMAN GAME, CSEE4840 Embedded System Final Project Report. [Online]. Available: http://www.cs.columbia.edu/~sedwards/classes/2010/4840/reports/pacman.pdf. [Accessed: 27- Nov- 2017]

[3] A Writer (1993), *Book Title*, Ironing Press, London.