

TC 3 (individual) -- Project proposal

Worth: 40 points

Assigned: 4 October 2010

Due: 15 October 2010

Gizmoflash Products
1 Varsity Drive
Suite 1973
Ann Arbor, Michigan 48108

To: All Synthesizer Division engineers
From: Nikola Tesla, Vice President for Innovation
Subject: Initial synthesizer project proposals
Date: 4 October 2010

Background

As you know, our engineers have been conducting research into existing commercial synthesizer-based toys in preparation for Gizmoflash Products' entry into this market. In your reports of September 27, you were asked to come up with innovative ideas for incorporating synthesizers into products. Although your initial suggestions ignored traditional business matters such as engineering feasibility, manufacturing costs, and market demand, they were critical first steps in helping Gizmoflash Products understand a product category that is new to us. Now we must move beyond investigation and speculation to a systematic consideration of the best ideas proposed by our engineers. First, you should be aware of certain business realities. According to our Chief Financial Officer, funding for this initial product development will extend only until 13 December 2010. By that date we must report our best ideas and demonstrate, as a proof of concept, how we plan to proceed. Following these final presentations and reports, we expect a second round of financing from Pixilated Studios, allowing us to fully develop the prototype projects during the winter and spring of 2011.

Your task

Your task is twofold. First, you will propose a synthesizer-based toy that Gizmoflash Products could develop and produce. The production version of this synthesizer would be developed for the summer film season of 2011 by a full team of Gizmoflash Products engineers and built at Gizmoflash's production facilities. We want you to be creative in your ideas--a wide range of devices will be acceptable, as long as they allow interesting and fun interaction with sound. However, keep in mind that the product must be simple and inexpensive enough to be incorporated into a mass-produced toy. We are not looking for full-fledged musical instruments or other, equally elaborate devices, but rather for imaginative devices that can be implemented with a simple microprocessor.

You need not describe a detailed plan for how to implement the final version of this synthesizer. Our engineering teams will review these proposals and recommend one design for the final product. If your team's proposal is accepted, your product will be developed by the full engineering team.

Second, you will propose a *prototype* of this product, which your team will build and demonstrate on December 9 or 10.

This prototype should demonstrate the feasibility of the key features of your proposed product, but it need not implement all features fully. When designing your prototype, keep in mind the following constraints:

- You will implement your prototype on an E100 processor and a DE2 development board. The E100 implementation on this board executes an instruction in about 0.3 microseconds (assuming a clock frequency of 50 MHz) and can store 16384 16-bit words in memory. The Lab 7 and Lab 8 handouts describe how to use the DE2 board to accept input and generate music.
- Your team will have approximately one month to implement, test, debug, and demonstrate the prototype.
- Your team members have other responsibilities at work. Plan for each team member to work 10 hours per week on this project.

We would like your proposal in memo format. You should describe the prototype's proposed features in detail and explain how the prototype demonstrates the main features of the final product as well as how your product addresses Gizmoflash Products' needs. Your proposal should contain a detailed plan for how your team will build and demonstrate the prototype, including how you will divide the work among team members and how team members will coordinate their work. You should include a simple Gantt chart in your memo. Your memorandum will likely need to be at least four pages long to cover the necessary areas in sufficient depth.

You should use the structure below as a guideline and should use enough headings and subheadings to help the reader make mental transitions from one topic to another.

- Memo heading
- Descriptive abstract (3 to 4 sentences)
 - Problem
 - Very brief statement of proposed solution
- Introduction
 - Problem addressed
 - Purpose of proposed project
 - Significance of proposed project
- Description of proposed project and product
 - Description of your product's appearance and structure
 - Description of your product's functionality
 - Clear explanation of how your project/product meets the client's needs
 - Constraints on the project (and how dealt with)
- Work plan
 - Plan for accomplishing objectives
 - Proposed schedule for completion
 - Gantt chart
- Qualifications of team
- Attachments (if necessary)

Feel free to contact Dr. Hildinger with questions.

How to submit your work

As before, submit your PDF file for this assignment to your drop box on CTools by 11:45 pm on 15 October 2010. Late assignments are accepted with a 10% per day penalty.

Grading scheme

Introduction: 15 percent

Background of project summarized adequately and need for product clearly defined.

6 9 12 15

Description: 35 percent

Good physical description; good description of functionality; clear explanation of how project would meet client's needs; mention of constraints on the project and how they will be addressed.

15 20 25 30 35

Work plan: 15 percent

Clear plan for accomplishing objectives; clear proposed schedule for completion of project; Gantt chart.

6 9 12 15

Qualifications of team and budget: 10 percent

Relevant qualifications of team members clearly stated.

2 4 6 8 10

Format and mechanics: 25 percent

Memo format: descriptive abstract, single-spacing, block paragraphs, bold section headings, adequate subheadings, page numbers; memo header in correct format; legibly printed in readable typeface. Good syntax and usage; clear expression; good organization of material within paragraphs and sections.

5 10 15 20 25

Total out of 100%: _____