Café del Campo

Sparktech

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1 Team members

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2 Introduction

According to legend, an Ethiopian Goatherd first discovered the coffee in the 9th century. When he noticed his flock became so active and energetic after consuming some kind of Barry. Later on, he tried the same berry by himself and noticed he could stay awake longer without getting tired because of the presence of caffeine in the berry. When the local monk witnessed this phenomenon they were intrigued and started to boil the bean and drink the water so that they could pray for a longer time even in the night thus the first coffee was born.

Later on due to colonisation in 1640 coffee was imported into Europe by Dutch merchants. After that, various coffees started to emerge. It got huge popularity, it even replaced wine and beer during breakfast since people started to notice drinking a cup of coffee boosted their productivity. Fast forward to the modern era, our life got even busier and therefore to keep our

focus and energy we often drink coffee, from homemade to vending machines. Coffee is one of the most consumed and accessible drink 2nd after water. Moreover, there is no sign of decreasing its popularity. Due to its huge popularity, there are various versions of coffee and various ways to serve.

During the Hardware Engineering Lab we are going to Design and build a prototype of a Coffee vending machine Named "Café del campo" Using FPGA and VHDL. Using "VHDL", we can program our Feature circuits, Logic, and other necessary components from scratch. For the VHDL programming, we are going to use ModelSim software. After programming our features in VHDL, we need to build the necessary circuits so that we can manufacture them. To Design and build our necessary "FPGA" PCB board we are going to Use "Eagle". To realize our project these two methods are crucial because of the reason above. We are also going to implement some other methods like "block diagram, Agile project management, various technologies, VHDL Implementation, PCB Design" etc. which we will discuss in detail later on in the paper.

3 Concept Description

A Coffee machine that provides coffees with high quality coffee. According to the type of coffee, the ratio of water, coffee powder, milk or sugar is adjusted. To acquire the desired coffee, press a number for type and another for whether sugar is added. The output will then be water, coffee powder, milk and sugar if selected.

In Figure 1 we have a guide on how are the different combinations of coffee, streamed milk, foamed milk, water and chocolate, depending on the type of coffee that the user can possibly select

The block diagram of the coffee machine is described on Figure 2. There will be two inputs at the beginning of the project: coffee number and sugar selection, there will be a clock or timer that will determinate the amount of time that the different ingredients will be pouring into the cup and on the right side four initial outputs, coffee, water, milk and sugar. Depending on the time and the complexity of the task there are two extra components that can be added, the cash input and the cash change.

Figure 1: Espresso guide

4 Project / Team management

In carrying out our project, we consider project management as an important aspect that helps us in realizing the goal and objective faster. Project management benign the application of various methods, skill knowledge and experience to achieve a detailed object that has already been set and marked as the project acceptance benchmark. It is also very important that time and budget are considered. As students we embarked on this project with the focus on managing time and delivering the best result given the limited amount of time that and the no budget we deal with. Having this in mind, we

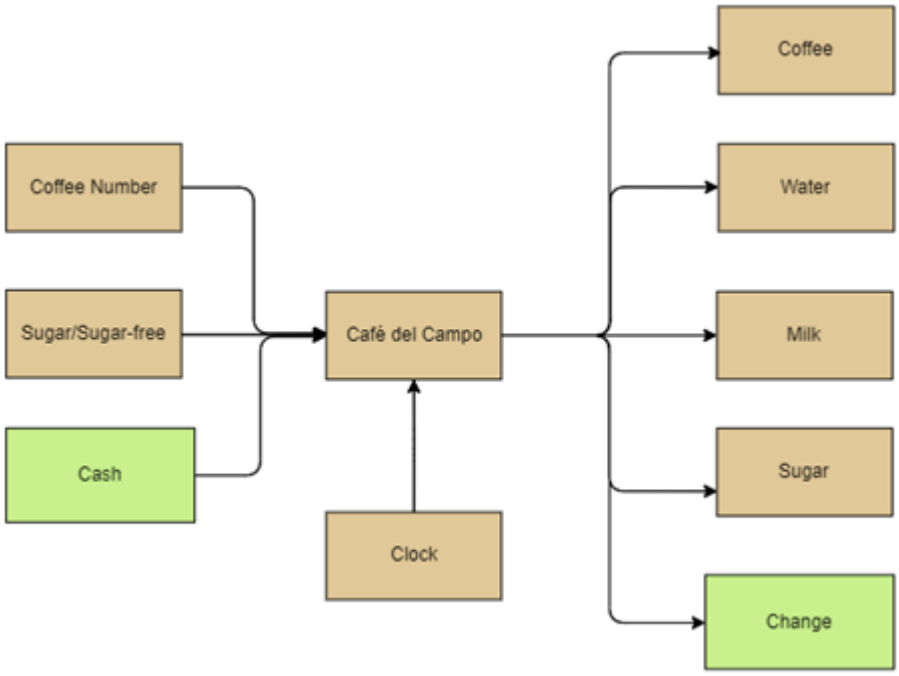

Figure 2: Espresso guide

decided to approach the whole project using the agile project management [3].

Agile project management is known as an iterative means of delivering a project throughout a given life cycle. There life cycle are made up of several iterations that are all geared towards the completion of the project. This leads to us having weekly meetings to analyze tasks and evaluate progress. With Agile project management, continuous improvement and development is the goal, to enable the project to get better on further iterations. While using Agile project management, we made use of Kanban framework to be able to achieve our project [2].

Kanban is a framework on agile project management that is deals with growth changes and the need for continuous process improvement. The core practices involved in using Kanban are: 1. Visualization of tasks in a board like manner with tools such as excel. 2. Reduction of work in project by introducing changes incrementally 3. Management of the flow of to-dos 4. Defining processes and tasks clearly 5. Enhancing the process of feedback to

enable improvement of the system. 6. Improving workflow all together. To be able to properly visualize our tasks and clearly see what each member of the group has to do, we made use of GitHub projects. GitHub projects can be seen as a customizable spreadsheet that helps us integrate tasks with GitHub in our repository. It empowers more customization by enabling filtering; sorting, grouping and working with GitHUb pull requests. It further looks static with the addition of colors to determine the various stage each task is [1].

5 Technologies

The technologies that will be used in the realization of the project are VHDL and FPGA. This technologies will be described in deep on the next submissions of the document.

6 Implementation

7 Use Cases

1. Infra-red sensors sense the animals and track their movements. 2. User can check and ensure the status of animals from infra-red receiver 3. User can make assessments from the observation and thus take action

References

[1] Kanvanize. (n.d.). What Is Agile Project Management? A Comprehensive Guide. Kanban Software for Agile Project Management. https://kanbanize.com/agile/project-management

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[3] APM. (n.d.-b). What is project management? https://www.apm.org.uk/resources/what-is-project-management/

[4] GitHub. (n.d.). About projects. About Projects. https://docs.github.com/en/issues/trying-out-the-new-projects-experience/about-projects