# Project Problem Statement

(Business Name/Project Name: Cupcake Express)

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## Section 1. Project Description

The Cupcake Express project’s sole purpose is to meet our clients need for providing easy access for customers to products while on the go. The project’s concept is based on a fully functional cupcake vending machine. The final deadline is on July 18, 2016 and will take two months to fully complete and deliver to the client. It is projected the whole financial cost will include a maximum internal budget of 500 dollars for simple product purchase and restocking fees. The vending machine’s monthly revenue projection is estimated around 1,250 dollars with a 15,000 dollar first year gross. The gross and shares from the application will be split among the three main project members. As a developing team we plan to undergo development by utilizing the waterfall methodology. We have chosen this linear-sequential life cycle model because it is very simple and geared for this type of project. It is our hope by efficiently completing this project through this development methodology, we can produce a quality product and ultimately aid in furthering our client’s success.

## Section 2. Problem Constraints

1. What is the Purpose and Need for the work?

The primary purpose for constructing the vending application software is to meet the client’s need of distributing products (cupcakes) and generating revenue effectively and reaching a vast audience in addition to the already established stationary domestic locations. Client hopes that this application will have the user interface functionality to make purchasing cupcakes during any period of time more convenient and enjoyable. Application allows the company to further monopolize those in the same field by continuing to provide consumers, products they love for a very low price point with the advantages of accessibility/availability.

1. What questions need to be answered?

How many cupcake products should be stored daily? Monthly? Yearly? Can we base this off our client’s stationary base sales analytics?

How long should the cupcake shelf life be?

How much walk through traffic will each vending area have? Where are these specific locations? Are they in appropriate areas? Are they safe locations?

Will the (hardware) vending machines be portable and change locations if need be? Or be permanently installed into infrastructure?

How can we implement a proper cash processing system to accept user’s bills/change and in turn accurately deliver back the correct amount of change to the user?

How can we accurately keep track of what each vending machine has in inventory at any given time (in real time)?

How often do we need to plan for maintenance later down the initial rollout of the application?

1. What key issues should be considered?

Some issues to be considered are the amount of stages needed to select and checkout a cupcake product. The amount of product in a checkout session should not be overwhelming (we recommend no more than 10 cupcakes in one checkout session per user). There should be some consideration towards how often a team is sent out to check for bugs and provide any necessary service (we recommend the application be serviced every two weeks or so for proper inspection). Lastly, there are some issues towards what should be the protocol for changing and replacing cupcake products in terms of shelf life (we recommend cupcakes should not be stored for more than 7 days at a time and be replaced as often as possible).

1. What are the Goals and Objectives of the work?

Functional Goals/Objectives:

The finished vending application should allow the user to experience effective operation interaction and control the machine from a human perspective whilst the machine simultaneously feed back information to both the Admin and aids the operators’ decision-making process. The user should be able to successfully order a specific product to their liking by have a choice of the following features: cake base flavoring, icing flavoring, and quantity of product. From there, user should be able to successfully confirm their order and complete the transaction process via both cash and credit processing. Lastly, the user should receive a receipt for their order and/or the change from their cash processing.

Non-Functional Goals/Objectives:

Finished product should be able to transition from one stage to another in no more than 10 seconds. The application should be able to be accessible on all versions of vendor hardware. Shut-down occurrences or freeze ups should not occur for more than 10 minutes. Client requires quick re-boot time and minimal shut-downs through diligent updates and system maintenance. Application should serve one user at a time (strictly domestically) and does not require any other languages, only English. Lastly, the client requests that there should be 20-30 Admins able to access the system at the same time at any given moment.

1. Who is the audience?

The targeted audience are people who are interested in purchasing cupcakes and are on the go. Audience has no targeted specific demographic or age group. The application will appeal to all.

1. At what level will the work need to be analyzed and evaluated?

The process of analysis and evaluation is needed in the early stages in the development of UML diagrams. It is determined that early analysis and evaluation will provide the most functionality/longevity for the application, likely minimize the amount errors and maintenance work, and will provide more developmental efficiency.

1. What types of alternatives need to be evaluated?

Some alternatives to be considered and evaluated early on:

How long should the machine remain, if it does not provide the projected profit in a year?

How long will the application’s life be? How often will it receive updates?

1. What evaluation measures will be used?

Evaluation measures will be solely derived from future deliverables.

1. What is the overall and traffic analysis study area, if different?

Overall, the traffic analysis study area includes the existing clientele traffic and consumer analytics from pre-existing store locations.

1. What types of useable information and tools are available and practical?

A platform to analyze business analytics could be helpful in further determining our scope in terms of inventory and audience preferences. A brief example of this use would be tracking customer favorites or highest selling products in order to generate possible suggestions that could potentially sit on the home page for customers to see before considering what cupcake they would like to purchase. Placing dietary/ingredient information for all icing and cake base options for consumers will help those who count calories or have allergies to specific dyes, foods, etc. Taking the time to analyze similar big brand vending machine locations and stocking protocols will also aid in Cupcake Express’ application development.

## Section 3. Schedule, Resource, and Budget Constraints

1. What is the timeframe for the analysis work?

Project deadline and delivery is due on July 18, 2016. Pre-analysis before initial development should be complete June 6, 2016. Post-analysis is determined to be conducted and completed by July 14, 2016.

1. What are the impacts from changes to Purpose and Need?

There are no identified impacts from changes to purpose and need.

1. What are the risks from outside sources such as other jurisdictions, stakeholders, and private citizens? For example, local concerns/issues/ politics can easily add time to a projected schedule.

Upon implementing Cupcake Express’ vending machines domestically, it is essential to know the specific area laws and jurisdictions in each area. Each vending location will also require the appropriate business licenses, taxes, health inspections, etc. Any potential stakeholders/backers, as well as, our client will be notified of any changes in our systems immediately and each vending location’s information, upon request.

1. Are there outside factors or time constraints that may dictate delivery of work items? For example, crash information is needed but cannot be obtained in the specified time frame.

There are no outside factors or time constraints that could interfere with the development/deliverable/product deadlines. The project’s life cycle will be conducted only internally, to eliminate any possible outside factors/obstacles from occurring.

1. What resources are available? Are they internal or external?

Client has relinquished all rights to providing preferred resources. All resources allocated to the project and development process will be internalized.

1. Are tasks dependent on resources not within analyst’s control?

Since all resources will come internally, there are no tasks that will be affected and out of our control.

1. Does the project funding require certain analysis tools and procedures?

Client has reasoned that analysis tools and procedures will not be required since there will be no full casting implemented and users/client will not have use for such features.

1. Is the budget adequate to perform the desired analysis and data collection?

Client has provided enough information and budget in order to adequately perform tasks and meet the specific deadline previously mentioned.

1. What is the availability and quality of existing data?

Availability and quality of existing data is derived from the client at any given time, as needed. Quality of already collected data is acceptable and essential in the starting stages of development. The pre- existing data is mostly client preference, application vision, and some logistic viewpoints.

1. Can the work be divided? Are tasks independent of each other? Are tasks sequential or concurrent?

It is possible for some of the work load to be divided, in terms of the various client deliverables required. Some of the deliverables will be independent of each other, while others are not. However, a majority of the development cycle, will require a bulk of the tasks delegated to be sequential, as we get further along.

## Section 4. Additional Details

* Given the above mentioned evaluation measures and other issues what are the likely performance measures that will be needed?

The most critical performance measure that will need to be implemented is testing across different platforms to quality assure the products and determine any bugs/flaws with the design before initial rollout of the application.

* Likely tools to be used?

The tools used in this application are split two-fold: Software and Hardware. On the software side of things, the program itself is likely to be coded in Java, which will serve as the bulk of application. This will be what controls the display, the transaction, and the interface for both administrative users and customers. There is also an option of implementing an internalized database constructed with Oracle SQL that will run with the Java program to keep track of available stock.

For hardware, there are several critical components required to meet the design specifications. First and foremost, the vending machine requires a card reader that securely scans inserted or swiped methods of payment, and the ability to complete the transaction based on a valid input. Secondly, since paying with cash is an option, the machine must be not only capable of accepting cash and coin denominations, but must be able to read them and distribute change accordingly. Due to the nature of the program, a touch screen would be the optimal method of navigating through the menu.

Group Task Load Evaluation:

Myself (Adele): Responsible for finding and modifying the problem statement to fit our needs for the project. Filled out a majority of the document.

Jawan: Filled out a majority of the document. Was in consistent communication via email and sending the document back and forth for modifications and such.

Lance: We have sent a couple of emails ranging from May 24, May 28, and May 30. He has yet to respond to any of them currently (4:01 May 30, 2016) as far as contributing he has not sent me nor Jawan anything. Lance responded this afternoon at ( around 1 something on May 31, 2016) didn’t check his email until this time and contributed to one question that had gone unanswered by Jawan and myself. He had reviewed the document.