Insta Food

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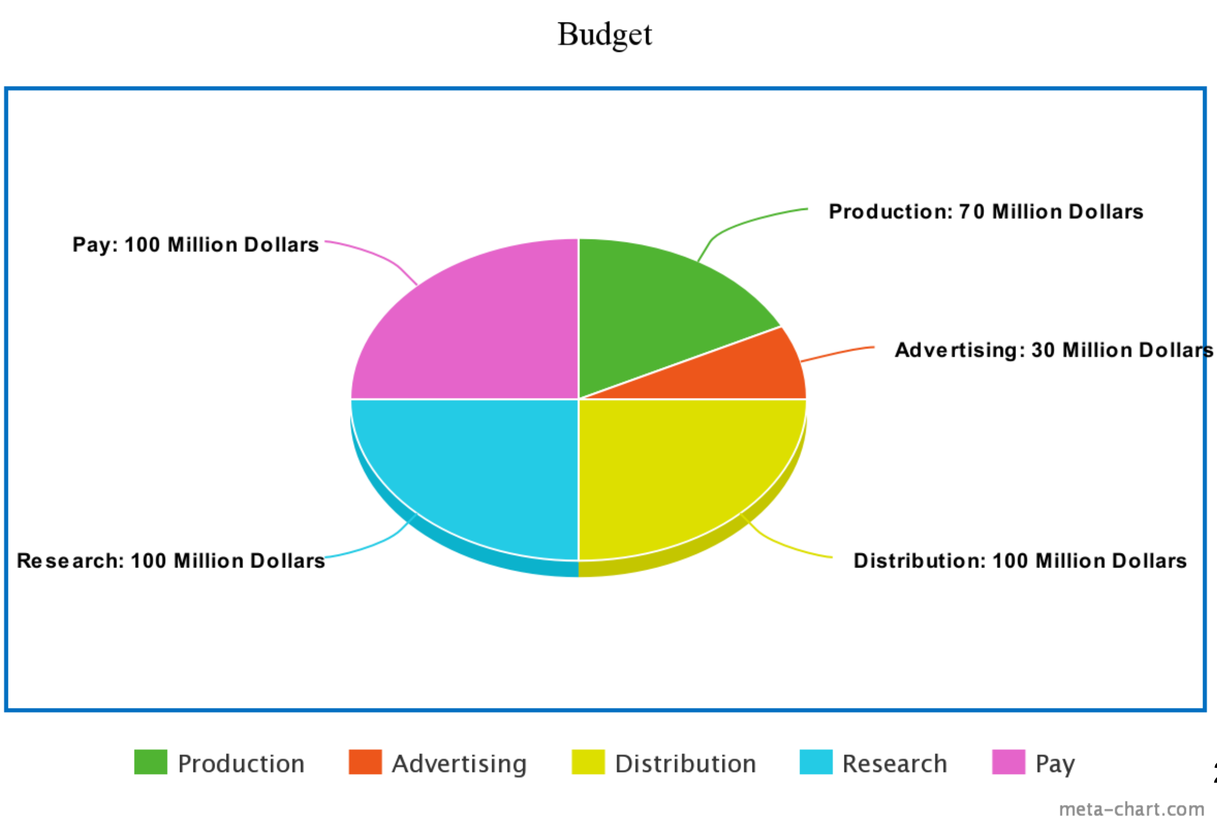
Overview

The project insta food is meant to solve the world hunger crisis while also making fully cooked meals more accessible. The project is a 3D printer that uses a specialized filament to print food. This filament is a lab grown food. This 3D printer would attach wired or wirelessly to a computer and you can download recipes for the printer to make. The project is meant to cut out the need for a whole kitchen making fully cooked meals more accessible, and without the need for kitchens it makes it easier to feed the masses. The motivation for this project comes from a futuristic idea show in the movie Spy Kids , in the movie a microwave is shown to make a full cheese burger instantly. This was the key idea that stems from Instant-food. The other reason is to create lab grown food this would cut down on the danger to animals and people that meat packing creates now, 75% of poultry meat packing workers report getting some illness or injury from the job.

Before our idea started there was a similar project based on only creating baked goods , our project differs from the pre existing project by our incorporation of lab grown food filament and the range of foods our project aims at producing. The project overview is to create our product that will use a lab grown filament to produce any type of food , secure investors so we can do more market research and secure supply chains, then open into the markets with grocery stores.

The project goals are to acquire a 500 million dollar investment for the start of production , the allocation of the money will be 70 million production , 30 million advertising , 100 million on distribution, 100 million on research , and 100 million for pay of executives and creation of business design. We want to reach over 100 grocery and tech stores within our first 5 years on the market.



Specifications and constraints , we need to have a 99% corrective work rate , each food item will take 5%- 10% of each filament bag. The constraint will be how much each filament bag will cost and the supply of each bag, with bags being the part of the project that will have to be rebuilt after running out. The printer part will be made to require very little maintenance.With the high amount of investor capital the insta food team should be able to build and get many printers produced around 10,000 printers and set up the supply for 100,000 food filaments in the first 3 months. The constraints will produce upward of 100,000 a month after the initial production.

Feasibility Analysis:

There are many different approaches that can be used to produce the organic material used in our InstaFood machine. When analyzing the different approaches, we narrowed down the techniques into three individual possible processes: Extrusion-based printing, selective laser sintering, or binder jetting. Extrusion-based printing is the most common approach used by non food related 3d printing. In this approach processed ingredients are pressed through an extrusion head to produce a continuous stream of material. Usually the material in traditional 3D printing is a plastic continuous filament. This proposed approach would be best for our project because it allows for a consistent consistency and a more dynamic and diverse set of available ingredients.

Comparatively, selective laser sintering or SLS uses a process in which powdered ingredients are formed together using a laser. This process has many advantages such as allowing for more dynamic and complicated construction. However, selective laser sintering is bound to a finite set of available materials. Because of this, this approach is not feasible for our design as it limits the types of food outcomes significantly.

Finally, the last approach that we consider when designing our product was binder jetting. Binder jetting is similar to laser sintering using a powder bed to form material. However, this process differed from laser sintering as instead of using heat to bind material, this process uses liquid to bind the ingredients together. In our testing processes we found that this method again, similarly to SLS, limits the types of food outcomes.

Proposed Approach:

After the feasibility study, the optimal technique we found that provides the most diverse set of ingredients was extrusion based printing. With this technique we are able to use many different food capsules to produce a large variety of different foods. In the full design sketch, figure 6 you can see that the ingredient extruded is attached to multi-axis motor system that allows for both x, y and z movement to produce complex shapes. This effect is achieved by using our software system that is programmed with hundreds of different individual recipe components. Each recipe file can be loaded onto the machine using a touch screen and the corresponding ingredients are then put into the extruder. From there we use our special food analysis algorithm to determine the best path for the extruder head to follow in order to produce the correct shape of the food. The food is extruded onto the surface plate [fig 6] that is heated to prevent the material from sticking to the surface once it has dried.

Non-Technical Aspects:

Approximately 957 million people are affected by world hunger [3]. The aim of our product is to reduce this number by millions. By allowing food to be produced quickly and efficiently we are able to make significantly cheaper food for our customers. Even though the cost of each unit at release will be high, as we produce more units we will be able to drive the price down. This will allow our food and product to be accessible to millions in underdeveloped countries that don't have access to quick food.

Additionally we hope that through our product we can reduce the amount Through high methane we are ruining the ozone level [3]. With lab grown food the high methane from farming different animals will lower. Lab grown food lowers the animal farming so there will be less animals producing methane. And we will use less fossil fuels to harvest the animals.

Administration:

For the Insta-Food product the main goal is to create a mechanism that is more efficient and easy for the customers to make food. With this product comes a lot of new innovation and technical advancements that make it unique and different from any other food product currently available in the market, meaning that there is a significant amount of new research and development that will need to be done prior to the release of Insta-Food.

For this product, our team has come up with a scheduled plan for how and when we are going to approach the different tasks at hand and how long it will take overall for us to launch our revolutionary project. The detailed schedule for our product and the corresponding dates and personnel primarily responsible for each component is shown in the schedule and notes below.

Phase One:

The preliminary phase of the project will be to research all relevant components of the product and related topics and gather useful information and statistics. This research will be conducted by all members of our team, so there is ample personnel to conduct the appropriate amount of research. We will also be reaching out to experts on certain topics of our product outside of our team, for example conducting research alongside people involved in the food market industries, 3-D printer and filament experts, technological scientists, and scientists in research studies involving lab grown food. This phase will take anywhere between 4-6 months and will be approached from all members of the team.

Phase Two:

After gathering all the information and research necessary to create our product, the next phase will be a combination of creating designs and prototypes, as well as funding for the financial need of producing this product. Our team will develop preliminary sketches and outlines of what the design for our machine will look like as well as the science and technology behind each component. This phase will also include the funding for the product. Given the costs of materials and labor costs and production costs, that will be discussed later in the report, there will be a significant amount of funding that will take place prior to production. The team has come up with a few ideas on funding. The primary funding source will be from crowdfunding and small investors that are willing to invest in the company and product, so we are able to make a working prototype to show other possible investors. Once a working prototype is completed, our team will approach investors through Shark Tank and ask for a $200 million investment for 15% of the company in return. The best outcome of this tactic will be to get the investment and have an experienced investor and business partner to get our company up and running. That will take care of the majority of our funding, but much like any other company, we have marketing plans in place for TV commercials, ads, and other social media advertisements to get our company out there and buyers interested. This phase is projected to take 3-5 months depending on progress and any unforeseen setbacks we may encounter.

Phase Three:

This phase is where we start production and get our product up and running and start to sell. The goal for this phase is to start product sales in local supermarkets and stores at an affordable price that also has a return profit. We will make plans to partner with the local Costco to guarantee that our product is always on the shelves and available to the customers in a very popular and high activity location. From there our marketing base will only grow and we will continue to make contracts with other big businesses to have our product on the shelves everywhere. The timeline for this phase will be dependent on how long the other phases take to complete, but as of now if we were to begin phase one in June 2022, we would be projected to reach phase two by November 2020 and reach phase three by April 2023 the latest.

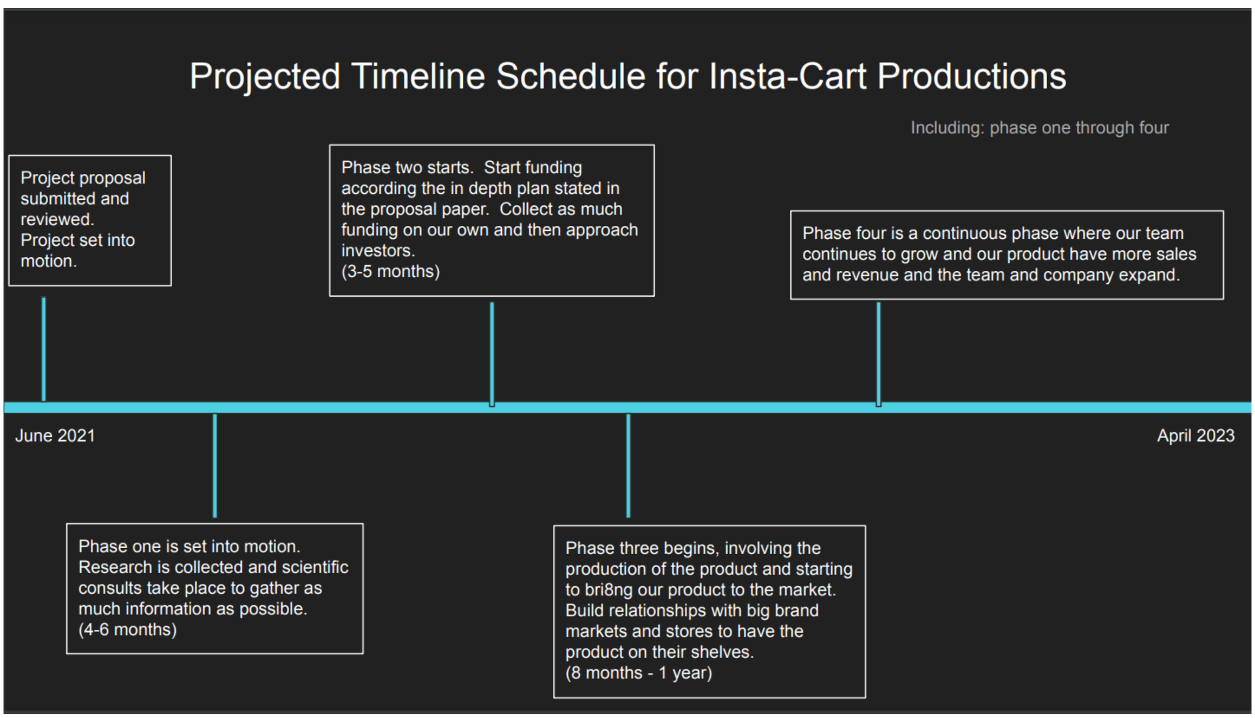
Phase Four:

This final phase is primarily geared towards promoting our product and furthering the exposure and profit. We predict that by this time, our product will have made $5 million in revenue and it is projected we will have launched in our 10th city. This phase is ongoing, as we will continue to progress and the product will be sold in more and more cities and possibly going worldwide.

In terms of our budget for this project, we expect to have a high budget for this project, but we do intend to raise our funding as previously discussed above and go into the specifics of how we are going to approach the funding process. The specific values and numbers for our budget are shown in figure 1 above. The budget consists of five different sections and the money is distributed among the sections how we see fit. We also put together a price breakdown for individual units of our product that gave us a basis on our overall cost and profit. We predicted the 3-D printing machine unit to be around $2,000, with the extruder costing $500. There is also a manufacturing cost at $800 and a distribution $150. The filament is predicted to cost between $200 and $500. The "ingredients" for the product would be around $100 to $200 depending on the ingredients, but we predict it will cost that much to produce 1000g of solid. We also have a goal to reduce all of these costs with investor funding and more efficient techniques and the more products we sell overall could also help reduce the costs.

Overall, the team is prepared and has an in-depth schedule and plan to approach our project and the proper resources for information and research and resources for the funding to be able to successfully execute the project.

Visual representation of project timeline:



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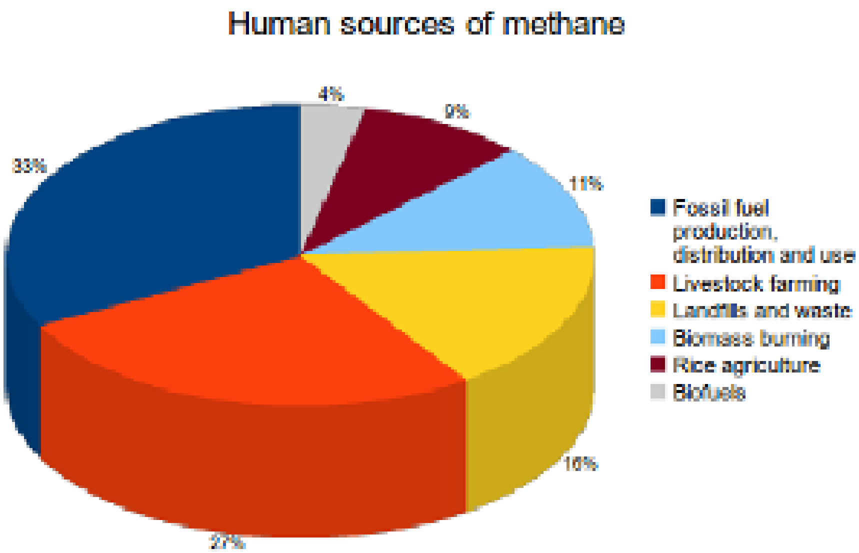


Figure 3

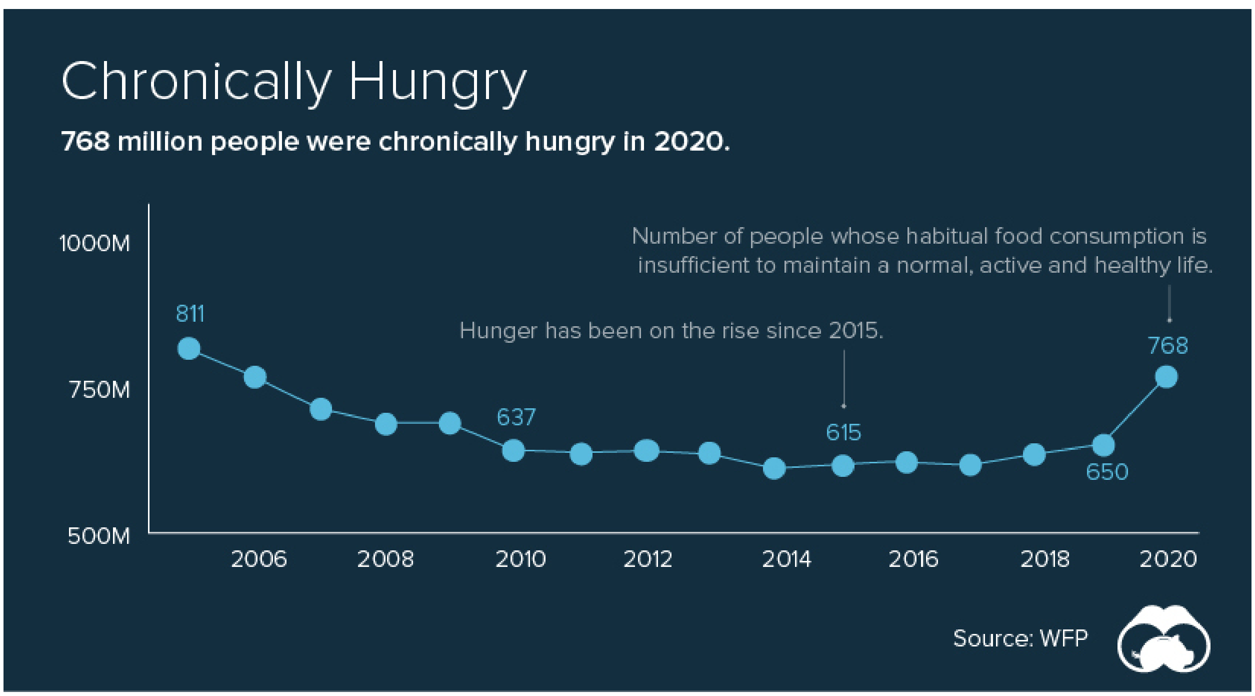


Figure 4

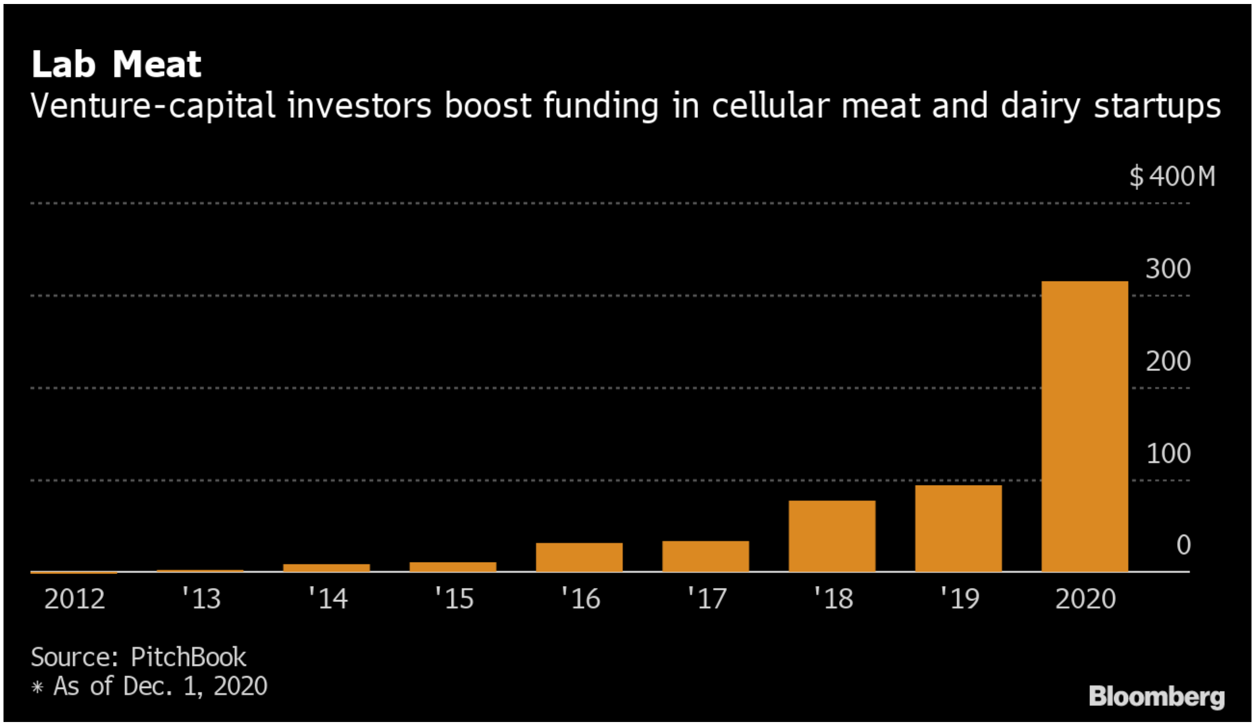


Figure 5

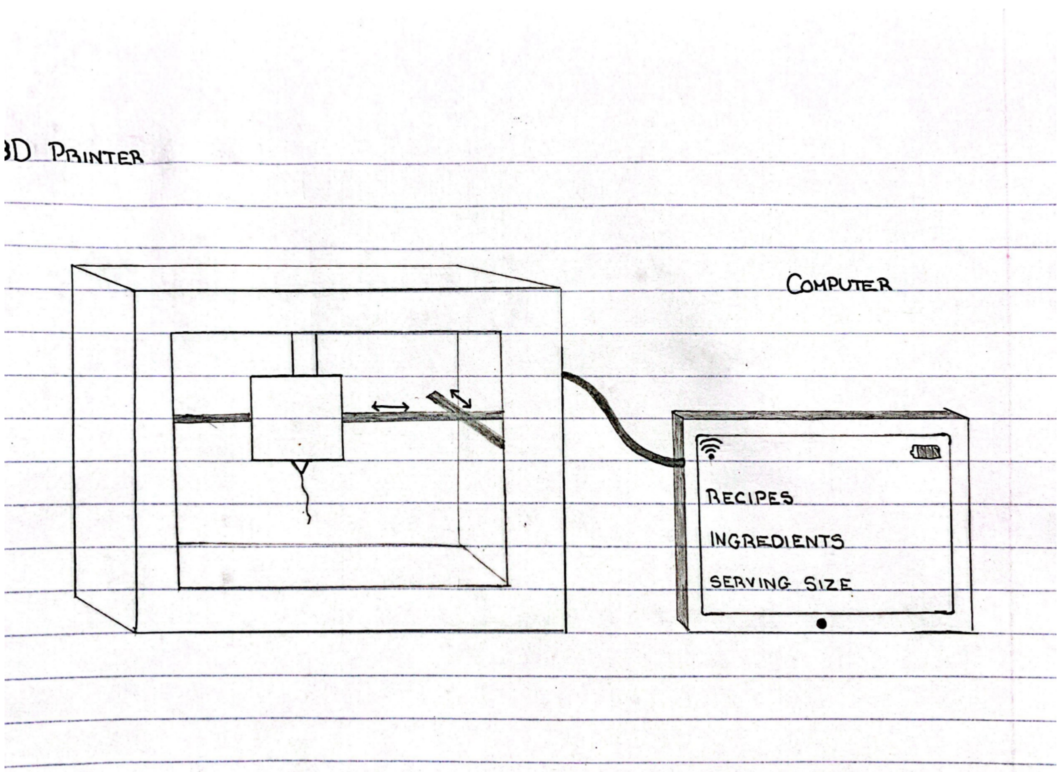
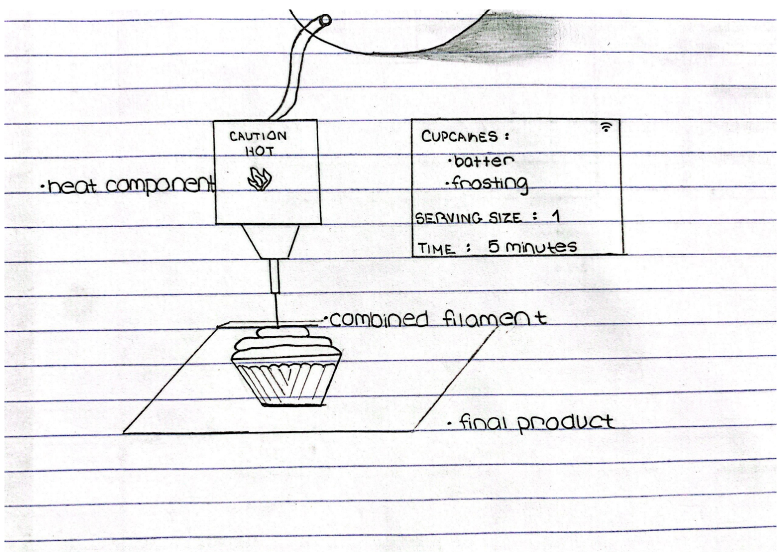


Figure 6


CAUTION
HOT
·heat component
CUPCAKES :
·batter
·frosting
SERVING SIZE : 1
TIME : 5 minutes
·combined filament
·final product
Figure 7