ESSENTIALS 🌍

Microsoft Imagine Cup

Round 1 – Regional Semifinal

Introduction & Background

UNIVERSITY

NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES - FAST

TEAM MEMBERS

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The Team

We are a team of three passionate undergraduates majoring in Computer Science at the National University of Computer and Emerging Sciences in Pakistan. Our primary motive is to contribute to our community by employing technology to work out tangible and effective solutions to real-life problems faced by our local community and the world at large. As such, we envisioned 'Essentials' to lay the foundation for a sustainable future by reducing the effects of climatic change by leveraging the power of machine learning, courier services, and the human psyche.

The Status Quo

0.9°C

Ostensibly, the measured rise of 0.9°C in the earth's average temperature is insignificant to warrant an alarming situation but at the end of the last ice age, average global temperatures were only 5-6 degrees cooler than they are today, and back then, the entire Northeast United States was under a carpet of 3,000 feet of ice.

A posteriori, minute deviations in the temperature of this planet can prove to be calamitous. From warming oceans to deadly forest fires to acute shortage of drinking water, these are just some of the effects attributed to climate change. And it is no overestimation to claim that if it is not reversed, climate change is a menace that will disrupt the entire ecosystem of our planet.

While fighting climate change is a slow and steady push against the ghastly envelope of greenhouse gases, on the other half of the horizon, we are facing a more immediate threat.

A study conducted by the UN Food and Agriculture Organization reported that every second, a person dies of hunger. The World Count's website on global hunger has a

running counter that read 34 million lives lost to hunger in 2019 at the time of writing this. And if that does not petrify you, a person dead every second means that's three people dead by the time you finish reading this sentence.

But on the contrary, a research paper produced by the University of Applied Sciences Wiener Neustadt in Austria reported that globally, nearly a third of the food produced for human consumption is either lost or wasted each year. This is roughly equivalent to 1.3 billion tons of food going unutilized annually. Not to mention the energy, cost and the environmental degradation it took in the form of carbon dioxide emissions are all rendered meaningless with it. To top it off, this unutilized food ends up in landfills and contributes further to toxic emissions that lead to further global warming.

Insofar, the bleak picture painted is as follows. In the foreground, we have people dying because of the lack of food, but we also waste tons of food that could have gone into saving the lives lost due to the very lack of it. And in the background, we have a long-term but arguably a more devastating threat that will render uninhabitable the only habitable planet we know of.

The key takeaway, however, in this entire discussion is to remember that the very science that tells us we've got a sticky situation, also advises us on how to get out of it.

Enter Essentials

Essentials will be a cloud-based web application that will establish an online marketplace that will combat the menace of global warming and climate change. What differentiates this app from the current e-commerce websites like Craigslist, eBay, and others, is that Essentials will promote the buying and selling of reusables and consumables like food, clothing, hardware tools, etc.

Through an online marketplace hosted on Azure, one of the ways that Essentials will combat the menace of climate change and global warming is by gamifying the

consumption of cosmetically old but perfectly edible food so that it does not end up in landfills.

'Sellers' will be able to sell excess food in their homes to not only earn money but also support the collectivization of goods. Similarly, by promoting the sharing of clothing items, precious natural resources will be preserved and quality clothing will be made more accessible. One such use-case of Essentials is as follows: a 'buyer' will be able to search for homemade *palak paneer* (spinach) being sold nearby and then proceed to buy the dish from the seller.

It is worth noting that while selling items will earn the seller money, that is not the only benefit that they will be able to reap. Tax incentives on utility bills, among others, will be given to the top contributors in collaboration with the government as a token of appreciation and encouragement of their support for inculcating a sustainable lifestyle.

As far as the hygiene of the food and the clothing items that are up for sale goes, a machine learning model will be trained to differentiate between hygienic/fresh food and unhygienic/stale food.

This is just a single example out of the infinitely many possibilities enabled by Essentials. Ultimately, Essentials will have impacts far greater than the category of the application suggests. From fighting against climate change to earning money to providing tax incentives, Essentials will be the starting point where we collectively start building towards a sustainable future.

Who Is Essentials For?

Essentials is an application for everyone. From young adults to teenagers to adults to parents to grandparents, anyone who has access to the internet will be able to use Essentials and contribute to the fight against climate change.

Given the utility of an online marketplace and the rising trend of online shopping, the application will serve as the go-to place for anyone looking to find consumables and reusables at rebated prices.

Since Essentials will be integrated with prominent courier services and ride-hailing services like Uber, Lyft, Careem, and others, owning a car or bike will not be a pre-requisite for using the application. This will also allow the less privileged people to reap the benefits that Essentials has to offer.

Of course, it goes without saying that Essentials will not be discriminating against anyone based on their race, religion, gender, caste, creed or ethnicity. It is a marketplace that will not only promote the collectivization of goods but do so without any tacit or explicit biases. Resultantly, Essentials will not discriminate against the seller or buyers based on how they identify themselves.

Essentials does not and shall not discriminate on the basis of race, color, religion (creed), gender, gender expression, age, national origin (ancestry), disability, marital status, sexual orientation, or military status, in any of its activities or operations. These activities include, but are not limited to, buying or selling of goods on the marketplace. We are committed to providing an inclusive and welcoming marketplace for all.

Furthermore, once Essentials is fully deployed as a business and requires the recruitment of staff members, it will be an equal opportunity employer.

We will not discriminate and will take affirmative action measures to ensure against discrimination in employment, recruitment, advertisements for employment, compensation, termination, upgrading, promotions, and other conditions of employment against any employee or job applicant on the bases of race, color, gender, national origin, age, religion, creed, disability, veteran's status, sexual orientation, gender identity or gender expression.

The Essentials Of 'essentials'

Essentials was built using the MERN stack and deployed on Microsoft Azure on the cloud. For the sake of completeness, the application is a mixture of the following:

Azure, MongoDB, Express, React, Node.JS

Azure was used to host and deploy the application to the cloud. The users and items up for sale were stored on MongoDB Cluster hosted on Azure. Express and Node.JS were used for handling the backend requests and routing API calls. React and Redux were used for designing the frontend of the web app. Google Maps API was used to show the exact location of items on the map.

Application Walkthrough

1. Sign up to buy or sell items

2. Search for the items you want to buy
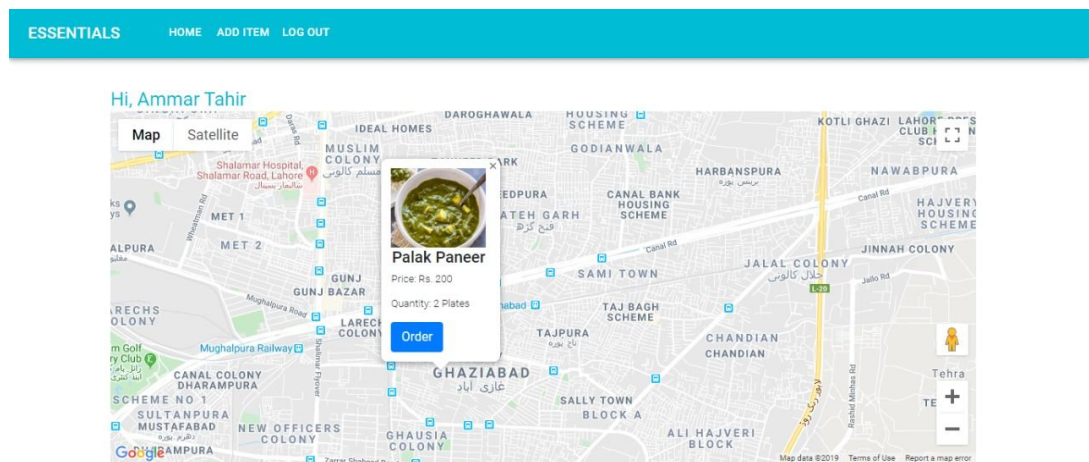
**3. Check the details
of the chosen item**

ESSENTIALS   HOME   ADD ITEM   LOG OUT

Palak Paneer

Description : It contain rich sources of protein
Quantity : 2 plates
Price : Rs. 150
Time made : 2019-12-13 22:05

ORDER

ESSENTIALS   HOME   ADD ITEM   LOG OUT

Your order is on your way...
Let us know when you recieve it
Make the payment to the Delievery Man

RECIEVED

4. Confirm Order

ESSENTIALS   HOME   ADD ITEM   LOG OUT

A billion thanks for using Essentials and being a part of saving World...
It will redirect automatically...

5. Save the world!

How Will Essentials Be Brought To The Market?

Essentials will begin as a small startup. Since launching right at the start with multiple collaborations with courier and delivery services might not be possible, the fallback would entail launching for a restricted area and then subsequently expanding the domain to include larger swaths of the city before expanding into others.

As stated before, to gamify and incentivize the buying and selling of items on Essentials, tax concessions and schemes will be provided in collaboration with the government. Since people who participate in Essentials will be giving back to the community, tax concessions and schemes will be a way to further encourage participation and give out tangible, short-term rewards.

Subsequently, as the application gains traction, it will expand to include delivery and courier services like Uber, Careem, and Lyft. These companies will be given a portion of Essentials' earning per month so they are paid for delivering the packages from the seller to the buyer.