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Essay Task

TASK 1

List your top 3 personal achievements that are most important to you.

1. Achieve new organization height and achievement in my term of presidency. When I first run for president in GIM organization, one of my main goals is to bring GIM to be recognized in Indonesia game industry. With rigorous networking and putting quality first in our game product, GIM has built relations and is recognized by major player in the industry. We have been invited to major event such as IGDX, Lapak Gaming Battle Arena 2024, and collaborated on events with Bandung Governor and big game studios in bandung. GIM member is thriving in game competition all over Indonesia such as first winner of Gemastik 2024, runner-up of Gameseed 2024, Best Visual on Gamejam+ competition and many more. Safe to say the organization has reached the beginning of its golden era.
2. Granted the opportunity and surviving in Brazil as an exchange student. I was an exchange student of Rotary Youth Program 2019 Brazil. Being 17 years old in a foreign land for over 9 months is a great challenge. I must adapt and overcome many miseries, problems, and culture shock that comes from being alone by myself. The experience pushes me to learn Portuguese language, build connection with people from different culture, and be mindful with my actions. It shapes me to be adaptive, discipline, and open-minded individual that I am today.
3. To be a student at Institut Teknologi Bandung is one of my big achievements. From my second year in high school, I know that Technology is the career path for me. My final year of high school is filled with study from morning till late at night with try outs for the university exam every 2 days. It is exhausting to say the least and it still one of my best effort of achieving something. Im proud to say that the result are beyond my expectation with acceptance from ITB, UI, ITS, and few other universities.

TASK 2

Write a detailed essay in response to one of the following questions. Length: 0.5–1 page.

Topic: How would you solve the air pollution problem in the Jakarta Metropolitan area?

To determine the best actions to solve a problem, one has to analyze the cause and reason why the problem is happening in the first place. To do that I cite a credible external source as a base for my argument in this essay. Vital Strategies collaborate with Institut Teknologi Bandung on research about the main cause of Jakarta air pollution. The research was conducted by installing air filter devices in three locations in Jakarta with major civilian activity and traffic. The device measures the amount of aerosol in the air along with the particle component that can determine the pollutant source. Based on their finding, the major source of pollution are gas vehicle emission, industry coal burning, open fire burning, and construction. The paper research also stated their recommended action to solve the problem, however in this essay we will further describe the right policy with different approach based on my argument and the result of the research. We will discuss the solution for the most impactful source of pollution, vehicle emissions, that contribute to over 41% pollutant in the city.

One of the first step toward Jakarta's clean air is transition to clean energy vehicle, mainly electric. Based on personal observations, the number of motorcycle in Jakarta is staggeringly high. The conversion to electric motorcycle is essential for solving the main problem. But with said solution comes another challenge such as long charging time for electric motorcycles and people's familiarity with gas motorcycle. One of the solutions is to promote the use of battery swap electric motorcycle. With said kind of vehicle, the wait time for battery charge becomes zero and can be even more convenient than ordinary gas motorcycle. However this solution require government support in funding and facility to provide the swapping station all over the city. The government also have a major role in providing incentives for citizen to convert to electric vehicles. First, the government can lower the buying tax and annual tax on electric vehicles with bonuses in feature, warranty, and/or vehicle maintenance. Second, dealer and government agencies can provide some kind of trade policy to change the existing gas vehicle for the newer model electric vehicle. Lastly, when the use of electric vehicles reached a certain high, government can issue some "penalty policy" for the gas vehicle owner such as certain road can only be used by electric vehicles or traffic engineering that favors electric vehicle owners.

The recommended action in this essay needs to be further studied mainly for its feasibility and effectiveness in the field. In the meantime, this essay provide my own personal view on the problem and the solution that I thought the most effective given the knowledge that I have. Hopefully this essay can brought up more idea solutions and can inspire people to applied it in the future.

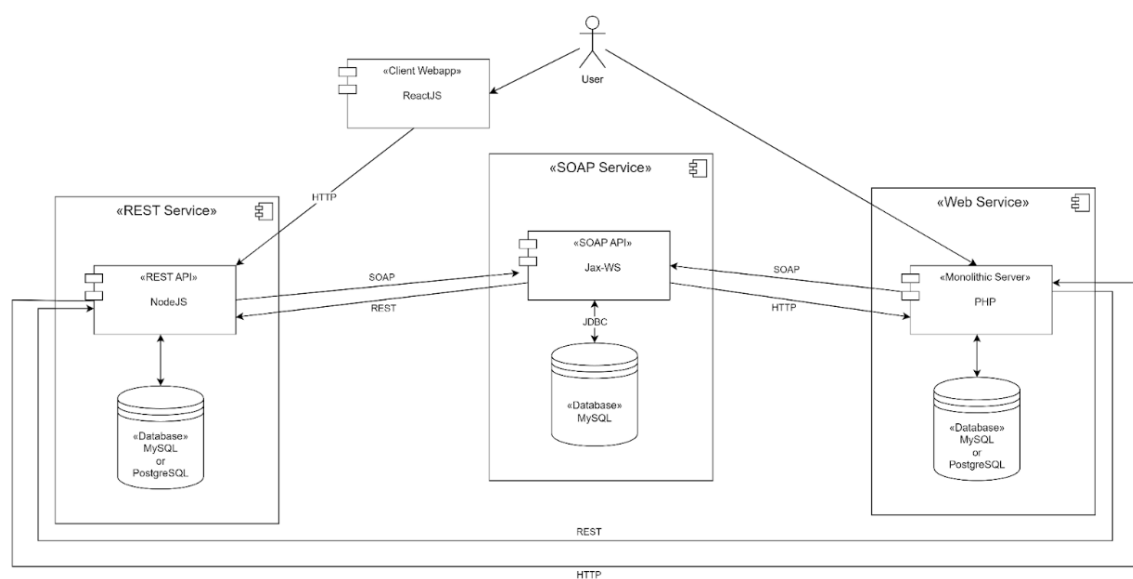
References: https://www.vitalstrategies.org/wp-content/uploads/Sumber-Utama-Polusi-Udara-di-DKI-Jakarta_Policy-Brief.pdf

TASK 3

Prepare a document that answers one of the following questions:

Topic: Describe the architecture of a software product you have developed

Last year, as a final project for Web Development course, my team and I built a podcast and music streaming platform. The requirement are using microservice architecture with multiple framework and multiple message protocol (SOAP and HTTP). The scenario provided by the lecturer is an mvc application that wants to be expanded. In our web app, the main application is a music streaming platform (PHP) and the extended app are podcast streaming platform (React.js) This is achievable with the following architecture.



There are 3 backend service with 2 frontend interface each with their own functionalities. Below are the detail of each component and the justification of the implementation.

Frontend

1. **PHP MVC App:** This is the main application with the main functionalities to stream music. The use of PHP MVC method is to make the development process more linear and simple so that the web app as a whole have strong fundamental basis.
2. **REACT FE:** This frontend interface is used as an extension of web app from the original with feature such as podcast streaming and subscribing to podcast creators. The use of react.js is to utilize the single page application method to create a faster and more responsive web app.

Backend

1. **PHP Webservice:** This component serve as the main backend for music streaming and user account authentication. The information is stored on the main database that contain encrypted data of user account and music files.

2. **SOAP Service:** This component mainly handles subscription process and authentication of a user. Database in this component store crucial subscription data and logging for user authentication access. The SOAP protocol is used based on its versatility to operate across system (XML Formatting), in this context between REST service and PHP service, and its built in encryption security of handling sensitive request.
3. **REST Service:** The REST service mainly function as a backend for the podcast streaming feature. Its hold podcasts files and podcasts creator data. For user to login to the application, the service have to authenticate through the PHP Webservice that have the main user account data. The choice for REST Service is for its ability to handle large data, in this context hundreds hours of podcast files.

The architecture is tailored for the scalability aspect of the entire web application. With each component handle specific and small features, as the web application grow, scaling the app become more efficient as time goes on.

TASK 4

Prepare a 2-3 minute presentation on one of the following topics.

Topic: The most interesting project (academic or professional) you have been involved in

In the middle of the year 2024 I joined a community service project called TukurKami. It focused on increasing the literacy rate in Bandung city. The impact it brings and my role as a teacher make this project one of the most interesting chapter of my life. The presentation details is included in the link that follows.

Presentation:

https://drive.google.com/file/d/14xZHBWPcF37mQ6cMjZEa09fllqh_S-Y-/view?usp=sharing

TASK 5

1. Describe the components of a test case. Also provide an example of a well-constructed test case.

From my personal experience and based on what I learned in university, a test case mainly consists of:

- Name, to identify the test case.
- Objective, describing the clear goal on what are the things that the test want to verify
- The Steps, a sequential like algorithm of actions to perform the test with detail.
- Expected Result, the expected behaviour or output of a test case process
- Actual Result, the result that the rest case receive in its execution
- Score, certain test case have a score metric other are simply work or don't.

2. Scenario A.

Test Case 1

Name	Login()
Objective	To test the account authentication and validity
Steps	<ul style="list-style-type: none">- Navigates to https://mail.google.com/mail/- Enter login credentials
Expected Result	The login is authenticated
Actual Result	(Not yet implemented)
Score	-

Test Case 2

Name	DeleteUnreadEmailHover ()
Objective	To confirm the functionality of deleting when hovering above email
Steps	<ul style="list-style-type: none">- Hover mouse about unread emails- Look for delete icon prompt- Click on the icon- Test if the email has been deleted
Expected Result	The email is deleted
Actual Result	(Not yet implemented)
Score	-

Test Case 3

Name	DeleteUnreadEmailSelect ()
Objective	To confirm the functionality of deleting multiple email with select
Steps	<ul style="list-style-type: none">- Select every unread email- Look for delete icon- Click the icon

	- Confirm if the email has been deleted
Expected Result	The email is deleted
Actual Result	(Not yet implemented)
Score	-

3. Scenario B.

Test Case 1

Name	Login()
Objective	To test the account authentication and validity
Steps	<ul style="list-style-type: none"> - Navigates to https://www.periplus.com/ - Enter login credentials
Expected Result	The login is authenticated
Actual Result	(Not yet implemented)
Score	-

Test Case 2

Name	AddItemToCart ()
Objective	To test the functionality of adding the book item to cart
Steps	<ul style="list-style-type: none"> - Hover above the book image - Look for icon of a cart - Click the icon - Go to cart page - Look for the same item book
Expected Result	The book is added to the cart
Actual Result	(Not yet implemented)
Score	-

Test Case 2

Name	AddMultipleItemToCart ()
Objective	To test the functionality of adding multiple the book item to cart
Steps	<ul style="list-style-type: none"> - Click the book image - Add the quantity of the book - Look for a cart icon - Click the cart icon - Go to cart page - Look for the same item with the same number of quantity
Expected Result	The books is added to the cart
Actual Result	(Not yet implemented)

Score	-
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4. Implementation

The Github repository below contains the implementation code for the test case

https://github.com/nomsf/openway_technical_test

note: during the test case execution, after some iteration, the Periplus website denied the request from the IP of my device. My suspicion is a security feature from the website itself to deny automated access to its service.