**Object Oriented Programming Final Project Report**

SchedNara

**BY**

Name : Ella Raputri

Student ID : 2702298154

Class : L2AC



**Bina Nusantara International University**

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Computer Science Program

School Of Computing and Creative Arts

**SCHEDNARA**

1. **Introduction**
2. **Background**

As a part of our Object-Oriented Programming class that is conducted using the Java programming language, we are expected to create a project that should solve a small but interesting problem in our daily life. The project at the bare minimum should focus on the topic that we have covered in class, which is related to Object Oriented Programming, so that we can learn new things while creating this project.

Hence, after some thought, I decided to initiate a project that I have planned to do since my first semester holiday, which is a workflow and scheduling app. The reason why I planned to create this application is closely connected to my jobs in one of the organizations that I have joined, which is KTOM (Kontes Terbuka Olimpiade Matematika).

KTOM is an organization that holds a monthly free Math Olympiad contest to help Indonesian people learn and practice high school Math Olympiad problems. One of my jobs there is to help the committee arrange the monthly schedule based on KTOM’s workflow.

For example, let the contest day be D-day, then 21 days before D-day (D-21) until 15 days before D-day (D-15) is the problem creation date range. After that, on D-14, the head of the problem setters will hand over the problems to the QC division, and so on. Then, if D-day is on June 14th, then the problem setters have to start create the problems for the contest from May 24th until May 30th. The head of them will hand the problem to the QC division on May 31st. One of my jobs is to help remind each division of a particular date based on the workflow. In this example, I have to remind the problem setter division on May 24th and May 30th, while for the division head and the QC division, I have to remind him on May 31st.

Every month has different dates, but the workflow is still the same, so it is tiresome to count and set the date manually every month. Besides that, several kinds of contests have different flows or checkpoints. Before this, I have created a similar function terminal program to help me with this problem when I was in my first semester. However, the functions are not sufficient enough for my job now. So, I thought of creating a GUI app with more features that can help me with my job in arranging workflows and schedules.

Besides that, to make the app look more fun and intriguing, I designed the app based on my favorite NPCs in Genshin Impact, which is the Aranaras. I also created an Aranara menu to let the user interact with them without wasting too much time (because the main point of this app is to help arrange schedules) with the cute Aranara to help relieve the pressure in our daily lives.

1. **Problem Identification**

The first thing that I thought of this Object-Oriented Programming Final Project is to make an app that can help increase my work efficiency, so that I can use it frequently even after the final project is submitted. That is why I was motivated to upgrade the previously terminal-based counting date program to a GUI program with more features.

User needs to sign up or login to their account first, so that they can access the tasks and workflows specified to them. Although this program will be only used by me in the future, but in my opinion, it is beneficial to separate the workflows and tasks for individual matters and works.

After that, there are four main menus that user can access, which are the homepage, the add workflow menu, the calendar, and the Aranara menu. The main function of this program lies on the second and third menu, which are the add workflow and the calendar menu. In add workflow menu, user can create, delete, and edit workflows. Meanwhile, in calendar menu, user can create, delete, and edit tasks and also insert specific workflow to the calendar.

Homepage only functions as a landing page and contains user task completion streaks and some random quotes. Meanwhile, the Aranara menu allows user to interact with particular Aranara. User can also ask the Aranara about their task, weather, etc.

So, my main objectives for creating this program are:

1. Help user to arrange their workflows.
2. Let user insert tasks based on their workflow to their schedule.
3. Help user arrange their tasks.
4. Relieve user stress or motivate user by providing interaction with the Aranaras.
5. **Project Specification**
6. **Program Name**

**“SchedNara”**

SchedNara is an abbreviation of Schedule of Nara. Schedule refers to my main goal of creating this app which is to provide assistance to arranging schedule based on the tasks and workflows. Meanwhile, Nara is what the Aranaras in Genshin call humans. So, SchedNara is the schedule of humans, or to be exact, the schedule of the user.

1. **Program Display**

The size for all the main frames in this program is 1280 px × 720 px. The background pictures of all frame are created by me in Figma using shapes, pen, and pencil tool provided there. The icons are also all imported from Figma using the Iconify plugins that is available there. The only pictures that are imported from other sources are the Aranara pictures. Reference and picture used in this program will be further discussed in part C1.

In total, this program has seven different backgrounds. However, some of them are similar and are different because of certain elements that are added to the picture. If we remove that certain element, then some frames are basically the same. So, the frames that has drastically difference are only four, which are the welcome page frame, the default main menu frame, the edit workflow frame, and the edit Aranara frame. Besides four of them, there are also several mini frames that only has white color as the background.

The welcome page frame consists of a hillside scenery with blue sky, white clouds, and green grass. This background can be viewed in the welcome page, the login, and the sign up. The default main menu frame is a standard white frame with blue rectangle on the left. Inside the blue rectangle is the icons or the buttons to direct the user to other main menus or log out. Both welcome page and default main menu background has the SchedNara logo. For welcome page, it is positioned on the top, while for default main menus, it is positioned on the bottom left of the frame.

As its name suggests, the edit workflow background is used only for the edit workflow frame, where user can add, update, or delete the flows or checkpoints in a certain workflow. Lastly, the edit Aranara frame which is the main frame for the user when interacting with the Aranara also has its unique background. The background is in a living room with a window, wooden floor, and some decorations. The Aranara will stand on a round carpet.

This program also utilizes the custom Cloneable Panel in an abundant amount. The Cloneable Panel is basically a JPanel that can be cloned based on the user input. These cloneable panels can be seen on things that user can perform crud with (create, read, update, delete), for example: workflows, flows, tasks, etc.

1. **Program Features**

The program has several main menus. Each main menu or main pages has their special features. Below are the explanations of all menus and their features in SchedNara.

1. Welcome Page, Login, and Sign Up pages

The welcome page only consists of two button, which prompt user to login to their existing account or sign up for a new account. If user chooses Login, then user only needs to fill in their username and password. Meanwhile, if user chooses Sign Up, the user needs to also enter their username and password, but they need to also confirm it. Password need to be in the length of 8 and consists of letters and numbers. Both of the Login and Sign Up page also has validation that can change the field that is not correct yet to be colored in red. After user press the submit button and all fields are correct, the user will be directed to the homepage.

1. Home Page

In the homepage, user can view their task completion rate or streaks in form of bar chart. The bar chart will be reset weekly. There is also text that tells user about their completion rate for today. Other things in the homepage is the random quote generator. All the quotes are from Genshin characters, including the Aranaras. There are also buttons that can redirect you to other main menus or logout.

1. Add Workflow Menu

The add workflow menu consists of several important features, from adding workflow, edit the name of the workflow, and delete workflow. User can also search the workflow based on its name. The add workflow menu can also redirect the user to the edit workflow menu to edit the flows or checkpoints for each workflow.

1. Edit Workflow Menu

The edit workflow menu consists of a white panel that consists of fields related to a workflow (name, type, day, notes, color), a save button, and a delete button on the left side. Meanwhile on the right side, there is a scrollpane for all the flows that the workflow contains. If user selects the flow inside the scrollpane, then the white panel on the left will automatically be filled with the information of the selected flow. User can edit or delete that flow from the white panel. If user does not select any flow, then the delete button is disabled and only the save button is enabled. If user clicks that save button and already filled in all the information, then a new flow will be added. Besides that, there is also a generate workflow to text button. User can input specific date as D-day and the program will generate the date of each flow based on D-day. The date generated are also copiable through a button provided there.

1. Calendar Menu

When first accessing this page, user can see a calendar with the size of about 1080 × 540 pixels. User can use the < and > arrow to move around to see other months. The date of today is marked differently than others, while Sundays are marked red. Dates from other months are colored lighter than the dates in current month. Below the date are dots that represent the color of the tasks in that day. On the right side of the calendar, there is a task panel that contains the tasks for the selected date. There is also an add task button that enables user to add a new task. For every task that is displayed in the scrollpane in the task panel, there is also the edit button and a checkmark box. The edit button allows user to edit specific task. Meanwhile, the checkmark box can be ticked by clicking on it and it is used to help user know if the task is completed or not. Above the calendar are the WhatsApp button and insert workflow tasks button. Similar to the generate workflow to text button, the insert workflow tasks will prompt user to input a date as the D-day and then it will insert all the flows as tasks in the calendar. The WhatsApp button is created to help me with my reminding jobs. It will direct the user to WhatsApp chat based on the number inputted and typed the message in the chat based on message template available in SchedNara. The message template and the contacts can also be edited through the menu directed by this button.

1. Aranara Menu

The Aranara menu contains three different panels which lead to three different Aranara, which is Arama, Ararycan, and Arabalika. Three of them have similar interaction dialogues. Only for some dialogues that each of them is unique. Arama is the most cheerful one, Ararycan is friendly but kinds of pessimistic, and Arabalika is antagonistic with his signature “Hmph”. Arama is the default Aranara for every user. User has to reach a total affection of 60 to unlock Ararycan and 120 to unlock Arabalika.

1. Edit Aranara Menu

Edit Aranara Menu or Aranara Activity Page is where the user interacts with a specific Aranara. On the right side, there are the set default and pat button. All users default Aranara when signing up is Arama. They can switch to other Aranara by using the set default button. Every Aranara also has different background music, so if user switches to another Aranara, then the background music will be changed. The pat button is used to pat the Aranara, every user limits only to a total of three time patting for a day. When patting, there will be also specific dialogue from the Aranara. The chat button on the left side is used to open the Aranara Chat Menu on top of the Edit Aranara Menu.

1. Aranara Chat Menu

The Aranara Chat Menu can be closed using a left arrow button on the Edit Aranara Menu which is only visible when the Aranara Chat Menu opens. Meanwhile, Aranara Chat Menu itself has eight buttons inside it. All of the eight buttons can not increase the Aranara affection towards the user.

* The ‘Greet’ button, is used to greet or say hi to the Aranara. Each Aranara will reply to your greetings differently.
* The ‘Tasks’ button, is used to ask the Aranara about the task in today, tomorrow, or other dates. The Aranara will tell the user the tasks names on that particular date.
* The ‘Word’ button, is used to open Microsoft Word.
* The ‘Excel’ button, is used to open Microsoft Excel.
* The ‘PowerPoint’ button, is used to open Microsoft PowerPoint.
* The ‘Timer’ button, is used to set timer and remind the user when the time is up.
* The ‘Weather’ button, is used to ask the Aranara about the weather today in a specific city. The Aranara will tell the user the temperature, the weather description, and some friendly recommendation regarding the weather condition.
* The ‘Game’ button is used to play the simple rock, paper, scissors game with the Aranara.

1. **Program Input**
2. Mouse’s left button, to click the buttons inside the program.
3. Keyboard key ‘Enter’, which can be used when filling out the information in Sign Up and Login page. Clicking the field is also allowed here besides the ‘Enter’ key.
4. Other keyboard keys, to input the information needed in all fields and textareas inside the program.
5. Program Multimedia Output

Besides the text output, which is the tasks, workflows, affection rate, etc., there is also multimedia output which is the image of the frame, icons, and buttons in this program. All of the images can be accessed in the ‘src/App/img’ folder. Meanwhile, for the audio files (background music and sound effects) are available in the ‘src/App/sound’ folder with specifications below.

1. Background music

* EnchantingBedtimeStories.wav for Welcome Page, Login, and Sign Up.
* MelodyofHiddenSeeds.wav for main menu background music if the default Aranara is Arama.
* IveNeverForgotten.wav for main menu background music if the default Aranara is Ararycan.
* ForRiddlesForWonder.wav for main menu background music if the default Aranara is Arabalika.

1. Sound Effects

* win.wav, when the user wins the rock paper scissors game.
* select.wav, when user clicks a button in the Edit Aranara menu or Aranara Chat Menu, except for chat button.
* lose.wav, when the user lose the rock paper scissors game.
* draw.wav, when the rock paper scissors game ends in draw.
* chat.wav, when the user clicks the chat button or the button to collapse the Aranara Chat Menu.

1. **Solution Design**
2. **Essential Algorithms**
3. **Evidences of Working Program**
4. **Lesson Learnt (Reflection)**
5. **Resources**