Inception

Team Koala

Zenan Ji - 1122396

Shujin Zhang - 901054

Yinghao Wang-1104891

Priyanka Shivampetha-1001913

Background, Client goals and motivation

The clients are the researchers in planning models, and they want to create a visualization tool that is used for helping them or other users with the visualize sequential solutions of AI planning problems specified in the language PDDL. For now, the process of the AI planning language PDDL is hard to interpret, and when a problem happens during executing the program, the users must review the whole code several times to locate where the bug is. This product generates the animation to explain AI planning problems, and it has functions to illustrate the reason and behavior of each PDDL code using the animation steps.

Therefore, the client goals:

1. Helping the user to visualize the process of the execution of PDDL- like AI planning language, so that the debugging steps are easy to be performed.
2. With the animation of the execution steps, the users would have a better understanding of planning problems.
3. For non-technical audiences, they would be able to be aware of what is happening without having the knowledge for AI planning algorithms.

Vision statement

Client:

The client for this project is Dr Nir Lipovetzky he is the senior professor at the university of Melbourne. He has interests across in Ai research planning and also involved in project development of lightweight automated planning tool kit.

Users:

The Users for this project are:

1. Researcher in planning models
2. Students learning planning
3. Industry partners (show solutions)

What does planimation allow the users to do:

1)Planimation allows the users to check the error in their pddl code.
2)For every problem of a specific domain, planimation creates general animation.
3)Planimation it also allows users to also encode new animation.

What are the specific goals of the project?

1. help to debugging pddl
2. better understanding of planning problems
3. showing solution to non-technical audiences

The reasons behind replacing unity with Pixjis

Hard to maintain - unity is less known and unity is more complex
Heavy engine to load in a web

Client Requirements:

- VSCODE plugging for PDDL integration with the plugging.
- Scope keeps functionality of current frontend
- Import VFG format (visualization files)
- Expecting implement PNG export
- Maintain two visualization access (see documentation)
- Deployment requirements: Docker containers, able to deploy in local server (to test)

MOTIVATIONAL MODEL:

WHO	**DO**	**BE**	**FEEL**
Client	Maintain software	Equitable	Challenged
Users	Utilize the software		Good
Team	Redesign the front end	Enriched	Enriching

Supervisor	Review the whole process	Scalable	Engaged
Lecture	Explain the theoretical and practical process	Flexible	Empowered
Future Developing Team	Enhance the design		Interesting

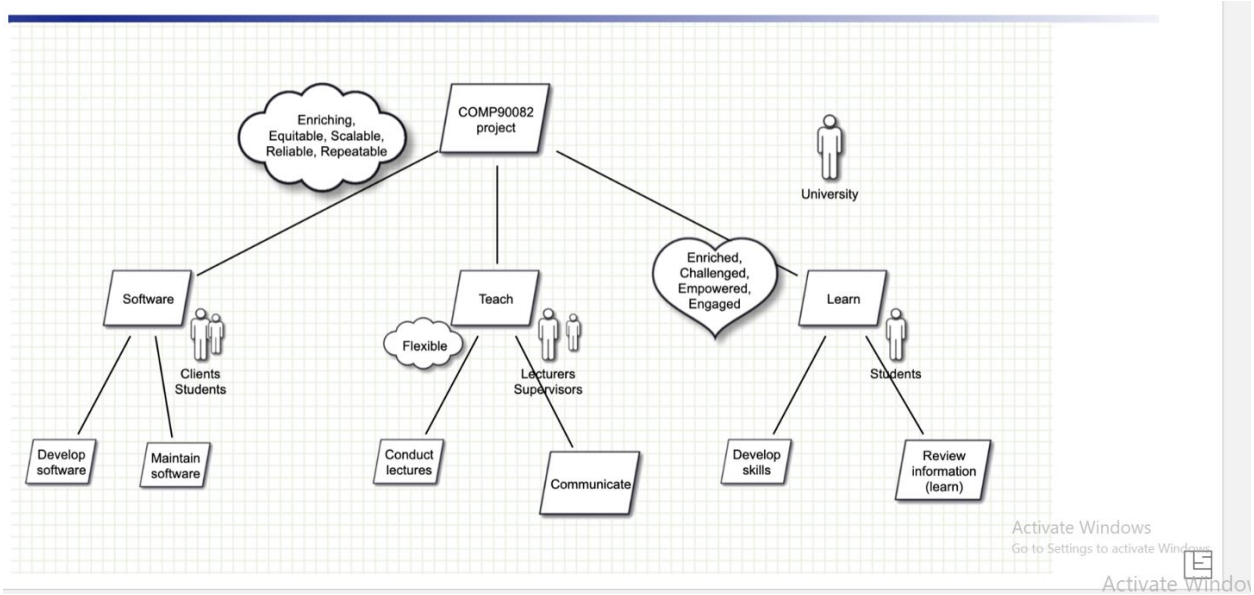

Figure 1: Motivational Model

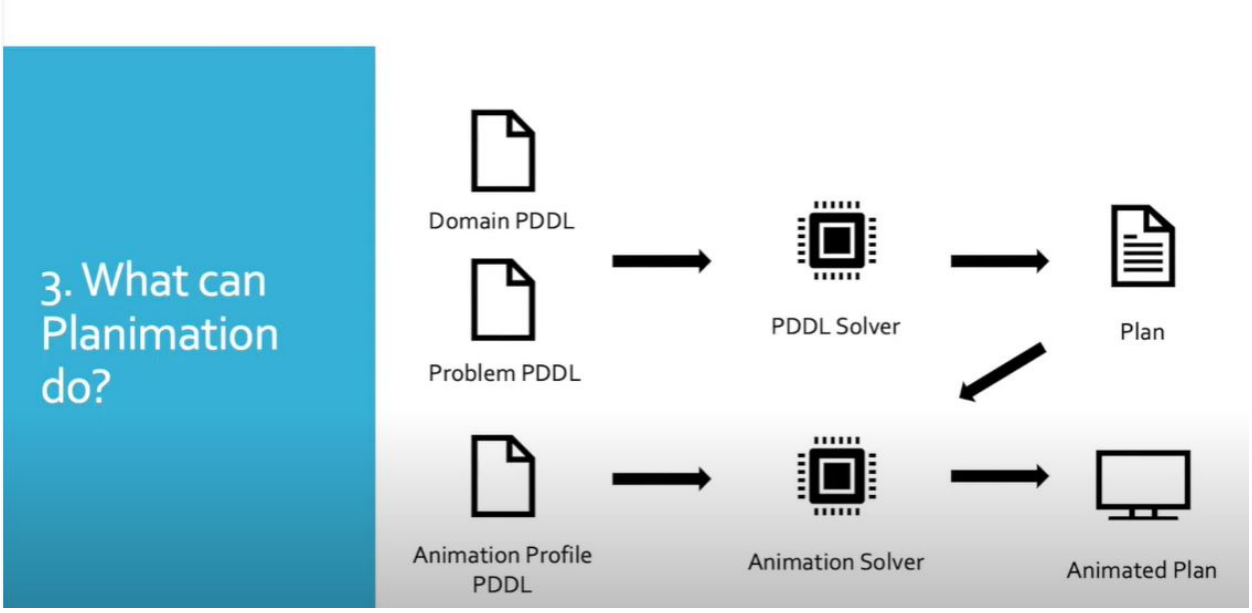

FIGURE 2: SHOWING WHAT PLANNIMATION DO

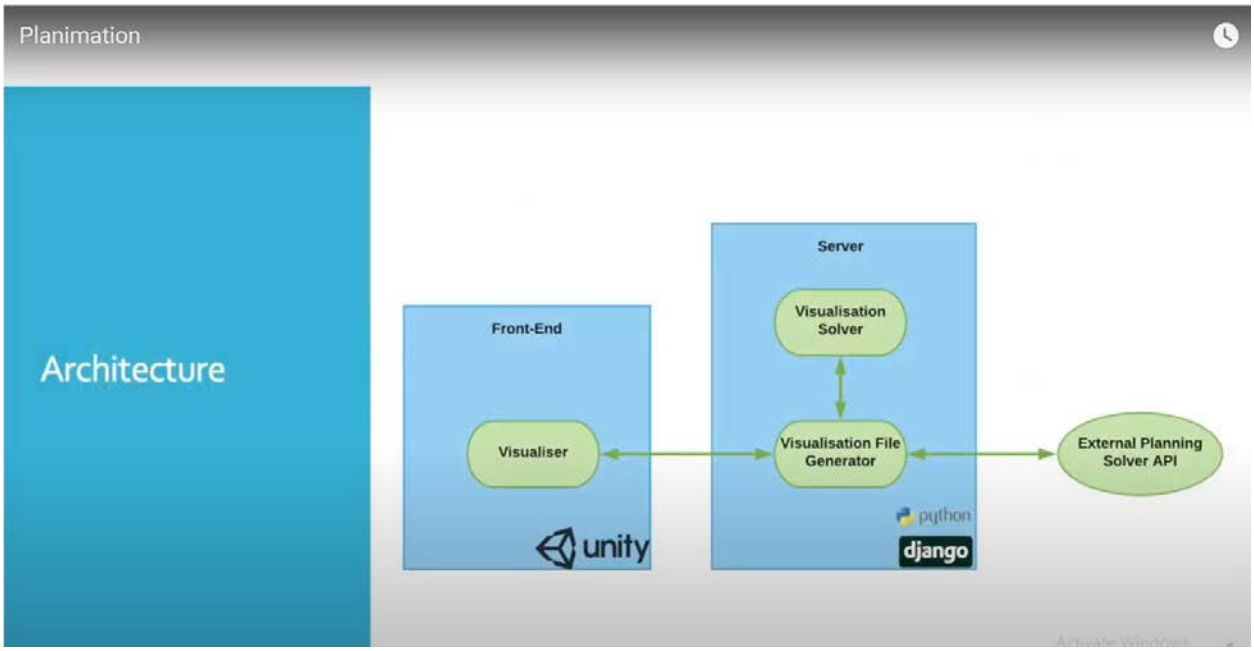

FIGURE 3: ARCHITECTURE OF Planimation

Operational Documents:

FIGURE 4: PLANNIMATION DEMO

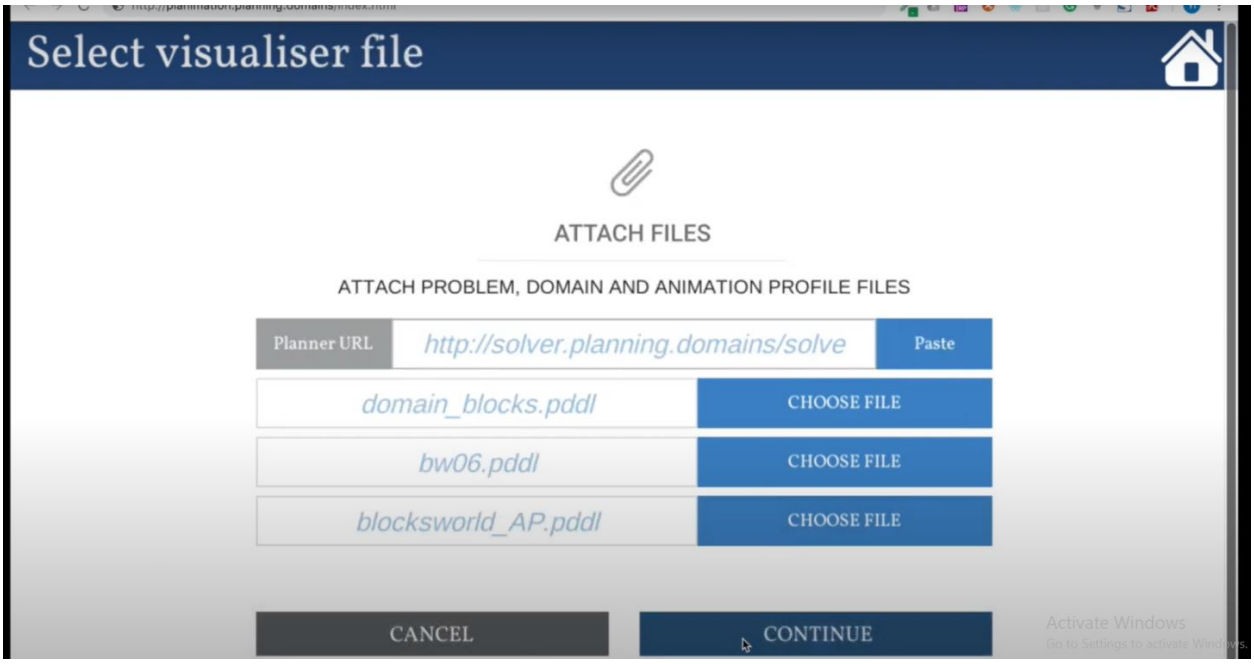

FIGURE 5: SHOWING HOW TO SELECT VISUALISER FILE

FIGURE 6: STEP CONTROL

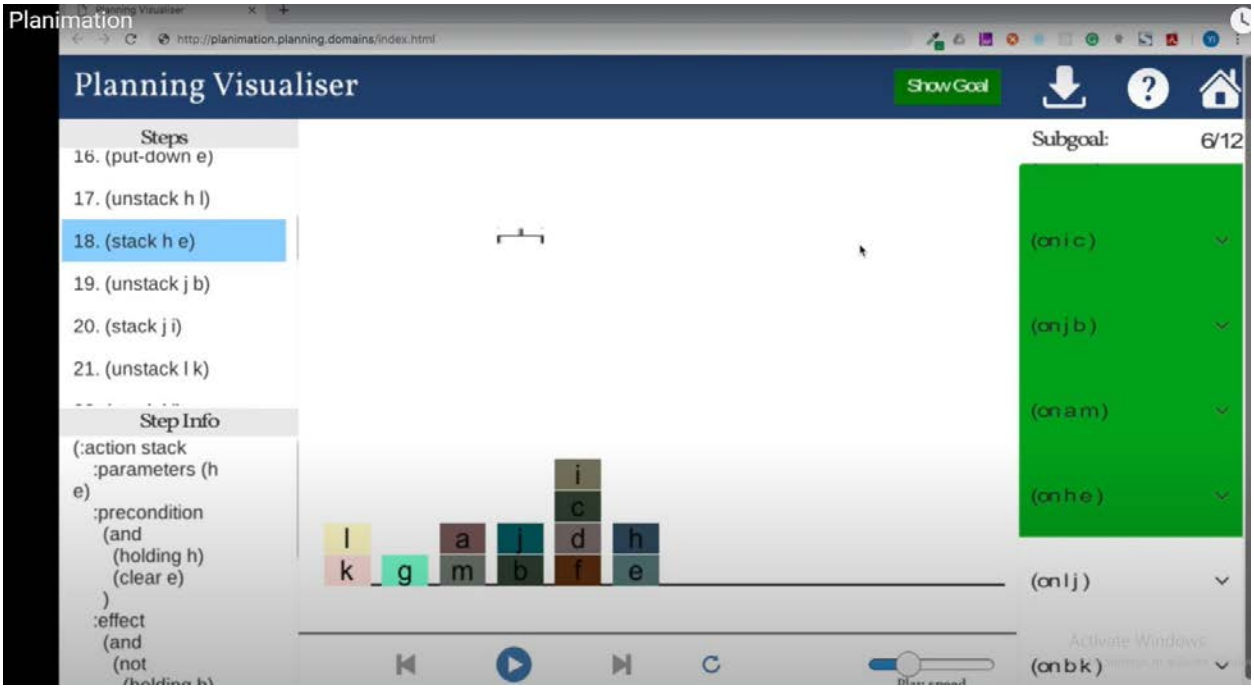

FIGURE 7: SHOWING HOW TO USE STACK STEPS

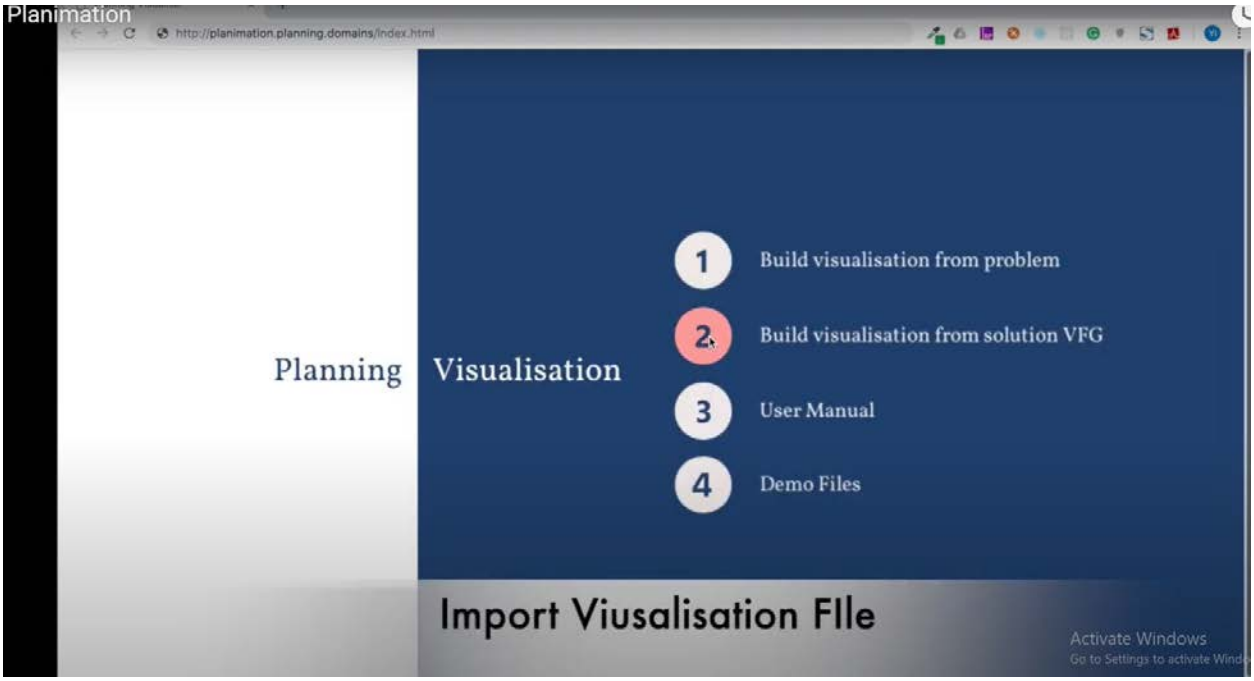

FIGURE 8: IMPORTING VISUALISATION FILE

FIGURE 9: SHOWING STEPS FOR PLANNING VISUALISER

Business value(non financial & financial benefits):

This project is of considerable business value for the client Dr.Nir Lipovetzky because as a client wants to maintain its current features and integrate with new development tools and plugins so that client is able to extend the features and maintain the online editor accordingly.

The students are able to gain experience on working on the real time project and the development experience which could be useful for future career opportunities.

Requirements

Client has a several requirements which has to be finished are:

1. Integration of the plannimation module with a plugin. Because by integrating the plannimation through a plugin the users can install the plannimation through the online pddl editor or through the plugin menu.
2. Loading the plannimation module

   By loading users can access the plannimation module by URL or by installing the pddl module. Through online pddl editor. So that users should be able to access and use the plannimation module.

3. Building the visualization from problem pddl file
4. Building the visualization from the solution vfg file.
5. Export the animation feature
6. Planning visualizer.

   The requirements which are mentioned from 1 to 6 are the in scope for the product of this project.

   The out-of-scope requirements are the requirements which are out of scope during the development stage.

   1) The focus of the project is to develop the JavaScript frontend and substitute existing unity with pixjs.so the team will mainly focus on frontend development and hence will not modify the backend during the development stage.

DESIGN DIAGRAM:

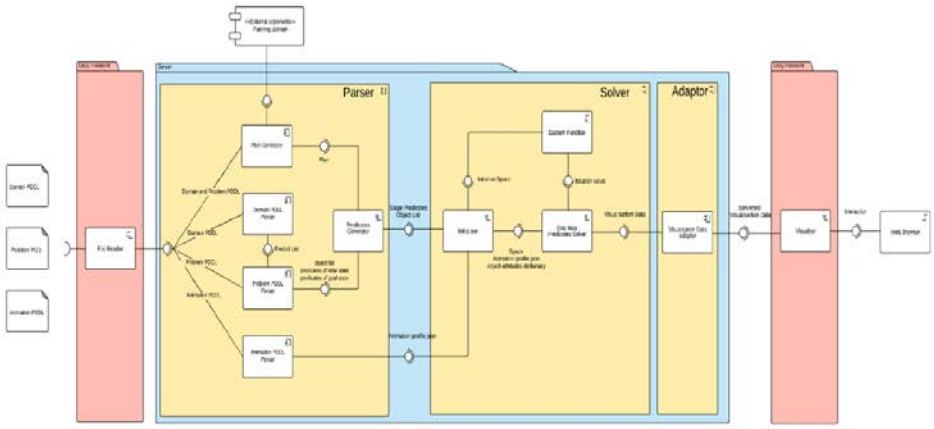

FIGURE 10: overall Architectural design

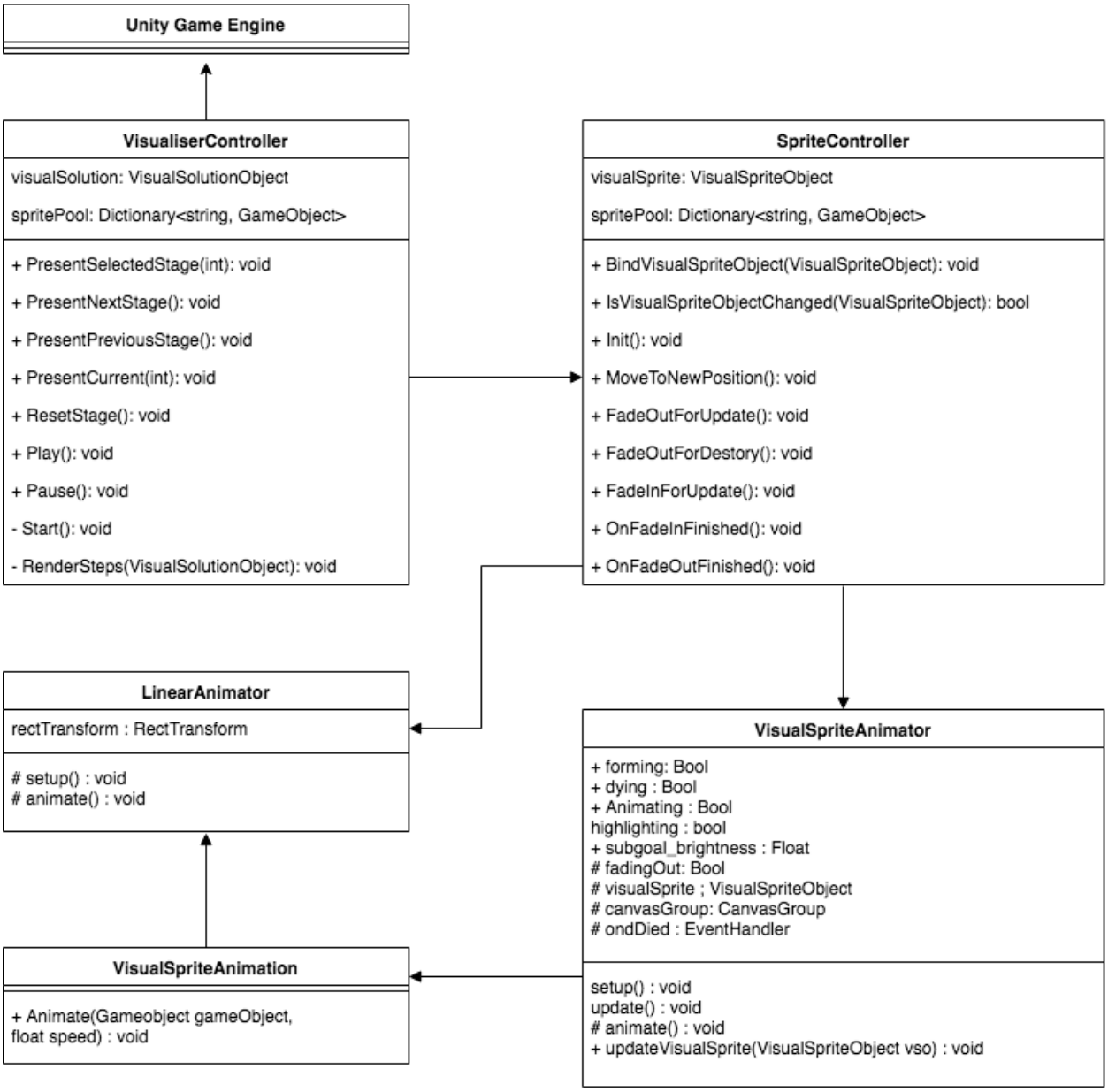

Figure 11: **Architecture design of frontend**

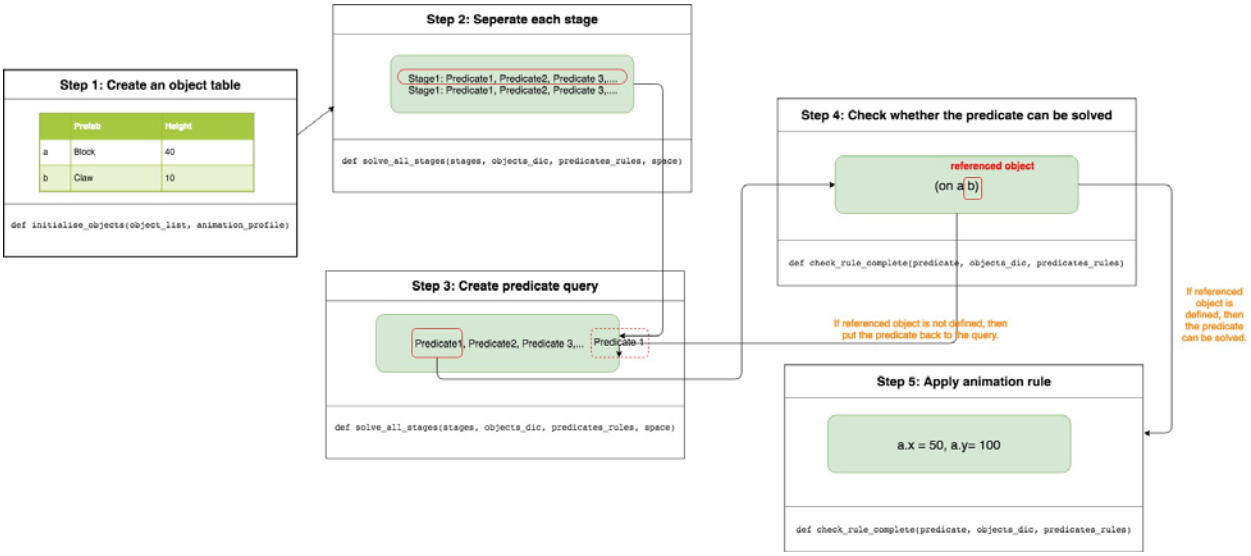

Figure 12: Architecture design for constraint solver

Constraints:

1)Due to the current covid situation the current learning has been made online so it is difficult for the whole team to communicate together as some of the team members are living in different countries so it would be difficult to communicate due to time zones and implement the project together so technically it could affect the efficiency of the team during development stage.

2)As this project has already been implemented and we as a team have to improve the existing application so all the team members have to understand the source code and analyse the project so it would take a lot of time so the efficiency will be affected at the initial stage of the project.

3)the team would not be familiar with the development tools as the team doesn't have enough developing experience so there might be low efficiency during the starting stage.

4) As the team are also enrolled in full-time studies, so they need to balance their time between the studies and project

5)As this project has a specified due date for the final prototype, which is of 2 months, the team must develop and test the prototype within this time frame and deliver the suitable product

User Story Table:

ID	Story Description	priority
1	As a user, I can choose to upload a VGF format file for visualization purpose.	Must have
2	As a user, for using the web based application.I can able to find the user manual for helping to operate applications.	Should have
3	For learning how to operate the animation. As a user, I could find a demo video.	Should have
4	For generating the Animation option.As a user if i could upload Animation PDDL,Domain.	Must have
5	As a user if i could choose to pause or play the animation	Should have
6	As a user if i could be able to move to the previous step	Must have
7	As a user if i want to play with the high speed	Must have
8	As a user if i want to play with low speed	Must have

IMPLEMENTATION:

For implementing this project, the team would be using certain tools which are Trello, Confluence and git The confluence is mainly used for specification of goals of the project, client requirements, research documents, architectural design use cases, user stories, risks, team meeting notes, links.

The Trello the team would be using for updating reports, estimation, issues and each team member will be updating the activities to Trello once they are finished Trello is linked to confluence, slack and GitHub.

For version control team would be using GitHub and git.

Delivery Approach/Agile approach:

The software development life cycle which we have chosen for planimation project is agile approach. The main reason for choosing this approach is scale and situation behind this project. First of all the scale of this project is created for client Dr Nir Lipovetzky for his planimation project which need to provide and assist the user in modeling process and educate users with Ai and providing solutions with animation. Due to this the close collaboration with the client is very important and to develop the project with best results and client vision. The situation for this project as this project is already implemented and we need to make changes in front end and the client may change the requirements or may not so the agile approach would be better in assisting with this situation because we can make additional changes if client needs them. If client needs some additional requirements or features need to be added in project agile approach is more feasible. Moreover, the agile approach allows easily for future release and adding the additional or new features which are at present out of scope.

Risk impact analysis

Risk id	Risk type (business/project risk)	description	impact	probability	justification
1	project	The development team might not be able to deliver by the due date	50%	5	As the team members are currently enrolled in full time studies, they might have assignments and other projects.
2	product	Maintenance of the website cannot be promised	60%	4	As the development team or testing team cannot guarantee the maintenance of the website.
3	Project	The scope of the project may be changed during the whole project	50%	4	The client may add the new requirements or change the requirements during the development phase
4	project	Since some of the students may drop the subject during semester so losing team might happen	10%	8	So, some of the students might drop the subject so it would result in losing the team

5	business	During management of the project there may be a bad management due to which low effectiveness might happen	30%	4	Due to the lack of technical experience with the tools the team may perform poorly.
6	product	If the proposed framework Pixjs cannot deliver the required result	30%	5	Choosing the wrong framework by the teammates might result in missing some important requirements so changing requirements might take a huge amount of time.

.

Plan

No.	Activities	Time
1	Evaluate project scope and risks	22 Aug
2	Develop software development plan	23 Aug
3	Discuss with client about the focus of this project and receive client feedback for the development	28 Aug
4	Determine what can be accomplished in the sprint and find items from the backlog that can achieve the proposed goals	30 Aug
5	Sprint 1	19 Sep
6	Sprint 2	24 Oct

COMMUNICATION PLAN:

Priyanka shivampetha is responsible for conducting the general core activities of Agile

methodology. For this project the meetings are the key mode of communication due to the current covid situation the meetings will be conducted online through zoom. For this project the team would be undergoing the four different kinds of meetings which are daily stand-up meeting, sprint planning meeting, sprint retrospective meeting and sprint review meeting. Every meeting communication planning is described below.

Google docs, emails, wechat, zoom meetings are the secondary way of communication which is used by scrum team so that the team can be maintained for communication in between team members. Hence ensuring to update the project progress

SPRINT PLANNING MEETING:

The sprint planning meeting is to be happened at the sprint as it is a 60-day sprint. Due to the current covid situation the meetings will be held online through zoom technology. The team includes the scrum master, product owner and scrum team

which includes the developers, testers and the scrum master is responsible for conducting meetings and needs to participate in the sprint planning meeting. After meeting the client, the product owner is Shujin Zhang is responsible to explain the team members about the user stories and requirements and breaking the user stories into the detailed tasks and needs to make the sprint backlog. The team members are responsible for what they must accomplish the assigned tasks and note down in the sprint goal.

DAILY STAND-UP MEETING:

For this project the team would be having a daily stand-up meeting through online zoom meetings for every alternate day for weekly there would be 3 daily stand-up meetings for 15 minutes.
During this meeting the roles who are involved in the project will be scrum master, product owner and team members. During daily stand-up meetings each team member will be explaining what tasks they had finished.is there any issue in accomplishing tasks and what tasks they would be doing next. The main goal of this meeting is to know the progress of team members.

Development Environment

Tools	Purpose
Confluence	Create, collaborate, and organize files and documents for the project
Trello	Task Management
GitHub	Source code management
Slack	Group communication
Node.js, PixiJS	Project Development Environment

TECHNICAL ENVIRONMENTAL REQUIREMENT PLAN
For iteration and version control to handle this project the team would be using GitHub tool. version control: for each iteration during development.
NON-TECHNICAL ENVIRONMENTAL REQUIREMENT PLAN
Confluence: The team would be using for updating the design, user stories, use cases specifications and goals of the project.

Trello: During development stage the team would be using Trello for assigns and distribution of tasks and Trello is linked to slack, GitHub.

slack, Gmail and Wechat: The team would be using for communication.

Zoom and google call: The team members would be using for online meetings.