Project Reports

Course: Computer Graphics

Topic: City Simulator (CitySim)

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Date: May 24th, 2017

TABLE OF CONTENT

I. INTRODUCTION.

1.1 Content.

"City Simulation" is a Computer Graphic project that provide a convenient developing environment in which users (especially architecture-relating users) can simulate a virtual city. With the built-in models of different constructions, this program is suitable for user to add and modify construction elements to create a virtual reality before processing them in real environment.

1.2 Technologies.

This section includes all technologies that the team use and implement to create the project. Some of them are not relate closely but contribute as supporting tools:

- ❏ IDEs: NetBeans 8.2
- ❏ Online Collaboration: Github (Storing Code), Google Drive (Documentation)
- ❏ UI Programming: Java Swing/AWT
- ❏ Object Manipulation: Java3D

Special thanks to Hong Zhang and Y.Daniel Liang for and outstanding and helpful source of madness **"Computer Graphics Using Java 2D and 3D"** with example codes and all Laboratory Sessions and Exercises from Computer Graphics Course.

1.3. Team Members.

As the project consists of two members, each will be responsible for very distinct function and sections corresponding to the final demo version.

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- Initialize Concepts and Functionalities
- Coordinator/Progress Tracker
- Documentation and Presentation
- Design/Implement UI and UX
- Resources Gathering
- Files and Projects Manipulation
	- Technique Researcher
	- Handle Working Environment Including:
	  +Ground Initialize
	  +Object Rendering
	  +Transforming Function
	(Add/Move/Rotate/Replace/Remove)

II. FUNCTIONALITIES.

2.1. Included functions.

All the functions mentioned in this section are those that implemented inside the latest releasing function (as the demo).

- ❏ System shall create new project.
- ❏ System shall save the project in the desired directory.
- ❏ System shall load the project in the desired directory.
- ❏ System shall generate a blank ground when create new project.
- ❏ System shall generate a list of built-in construction model for user to use.
- ❏ System shall let user add new construction on the ground based on location.
- ❏ System shall report if user place the construction for the same location of the previous'
- ❏ System shall let user move constructions after placement.
- ❏ System shall let user rotate the constructions as they want.
- ❏ System shall let the user change the construction to another one if he want.
- ❏ System shall let the user delete the constructions as they want.
- ❏ System shall provide UserGuide if the user have no idea what to do and how to do.
- ❏ System shall let the user exit the program successfully.

Note: There is User Guide come together with this report for instruction how to implement such functions.

2.2. Excluded functions.

All the functions listed under this section are not implemented or used at the current version of the project, but for further developing if the owners somehow have the opportunities.

- ❏ System shall highlight the collision of different object in working environment.
- ❏ System shall let user export project to different file types (PDF, PNG, BITMAP,.etc).
- ❏ System shall let the user hide/unhide texture properties.
- ❏ System shall inform the "saving warning" if the user made change but did not save.
- ❏ System shall bring the working environment to reality mode with changing lightsource.

III. CLASS DIAGRAM.

Class Diagram **pdf file** is **attached** along with this report in order to have a clear and detailed vision on the project source code and workflow. Please note that:

❏ Library Class for Inheritance: Class use for Inheritance in Java Library.
❏ Included: Class used for current version of project. The arrows between these classes indicating the workflow of the program of certain functions.
❏ Excluded: Classes are created but not used at current version but for further developments.
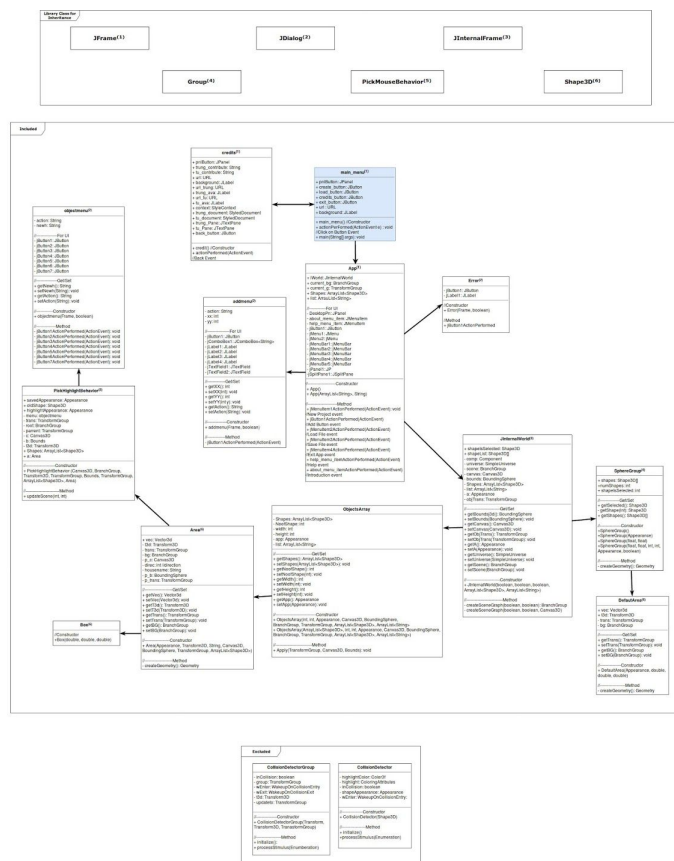
CLASS DIAGRAM

CitySim

Filename: Class_CG.pdf

IV. CONCLUSION AND FUTURE WORK

4.1. Conclusion.

The project indeed still needs a lot of developments and hours of working as we observe the demo version is very simple, naive and lack of user supporting tools (very bad UX/UI). Additionally, the functionalities inside the program just partially meet the initial planning for the project but not as a main purposes.

Despite all the disadvantages of demonstration version, this project somehow shows the very potential for further development in such a multiarea purposes (as a game, educational project, construction engineer supporting tool, or simple just a relaxing application, .etc).

4.2. Future Work.

As mentioned at the previous section, this project is still young, and still need a lot of dedication and working around it. In the future, as more opportunities are opened, this project might could possibly be involved.

Just in case it has the chance to grow, the first thing to deal when develop the project is implement every excluded functions mentioned in this report.