Hello, everyone. ~~It's the last presentation in this morning, so let's finish it quickly.~~ I am glad to have this opportunity to give a summary ~~in the first semester which~~ is about my ~~final~~ first semester's final year project: Development of a C++-based user-interface for a plasma simulation tool. ~~The subject~~ is presentation can be looked at ~~under~~ the following ~~headings~~ titles: Background theory, literature review, market survey, project planning, and progress made so far.

Ok, let's get started. Firstly, I will talk about the background theory. My work is developing a user interface for a plasma simulation tool which called Plasimo and it has been developed by the technological plasma group. It supports transient and steady-state simulations of plasma sources and displays them in one, two and three-dimensional geometries. It's powerful for plasma researchers because they can observe the changing process of micro plasma directly. However, the numerical data are saved in 68 different text files. Compare these files to plasimo's menu, you will find it's hard to match them especially for new users. In addition, the simulation process is irreversible, once you running the program, you can only observe one property at one time and if you miss the time to check ~~diagram~~ geometrie, the only way is to restart the simulation. By the way, this tool usually cost 6 minutes to finish one simulation and it could be very long if you change the code of model. Therefore, a user-friendly interface is needed to develop, it should fix the ~~lacking~~ deficiency in the plasimo and provide some functions to dispose of related data. I will introduce this interface in the part of the progress made so far.

deficiency

Secondly, I will move on to the introduction about literature review. I had read lots related papers in the university's library and I choose 2 papers to briefly describe here which are the most related to my program design. ~~First~~ It one is the web-based user interface for EAST plasma control system. The report of this system describes the clear design process of the GUI and it provides me a good example of showing data in a line chart. Moreover, I have learned the procedures of developing interface: Drawing the user interface, processing user's requests, test and analysis. ~~Another~~ paper is User control interface for W7-X ~~plasma operation. In the report, it used lots~~ words to describe how to design a quality user

And I also learned some priciples of disghing interface.

interface: operations should start with ~~an appropriate filled~~ Workspace in the dialog. All user actions can be triggered from the main menu. The design should reduce the workload of the user. Thus the investigate user's requirements ~~are~~ important.

Then I'll move on to the Market survey. The aspect of my FYP is provided convenient to plasma researchers and industrial users who using the ~~Plasimo~~ simulation tool. And in this project, Micro Discharge 2D (md2d) is the target model ~~in this project~~. It is a time-dependent model and the function of it is solve particle transport problem in conjunction. Compact Fluorescent Lamp Ignition Simulations is one of the market surveys of this project. Nowadays, these lamps are quite common in replacing incandescent lamps because of its high efficiency and lifetime. To investigate the breakdown reason of it, it needs the help of Plasimo and my project could provide assistance in this case. Therefore, ~~it~~ has some market survey but the main job of this interface is helping plasma researchers.

Next is the planning of my project, here is the Gantt chart in the preliminary report, my planning could be divided into 4 parts, preparation, Research work, Developing work and Report work. The sub-task in preparation and report work are similar to other students, the research work is related to learn knowledge of plasma and learn programming skills. The developing work describes the procedures of interface developing. You can aim to this black line, it is the date of today, and all the planning is progress on time, but there is some change in Design part because with the improved understanding of this project, the developing procedures need to optimize. In this slide, you can find the new ~~planning~~ is more specificity than the original one and ~~the developing~~ part is also progress ~~based on the plan.~~

My final point is ~~with~~ regard to progress made so far. I will show you my design of user interface and some result of programming. First I will show you the design, this is the main

window of my software, the user can read the basic operation of this interface first and start to use it, detailed guide and contact way can be also easily found in this window. Next is the main menu, the user can find their required property according to open the classified menu, moreover, the user could custom their frequently-used property in the quick menu and directly open it. The most inconvenient operation of plasimo is the irreversible simulated process, the user needs to focus on the changing of figure carefully, however, I have recorded the videos of these changing process and match them with the property and text files. and you can see the current software of my project now. I was prepare using Qt to develop it but meet lots problem, therefore, I change it to MFC to develop this software, first draw the UI based on the design, and program the action of them. I will show you current function now. When you load the output file, this system will open the information of this data first. And when you choose one property which you want to observe, the system will display the corresponding video and data in text file. The function of generating line chart based on data is still developing, it could only show the line now without the coordinate system. The layout of this dialog still needs to change because I want to the user have more space to observe the simulated data.

Today I give a summary of my First semester's work of FYP and I use five parts to introduce them. I think I need to end my presentation now. Thanks for your listening. If you have any question, I will be pleased to answer you!