CREDIT TRANSFER SYSTEM

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BY

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THIS PROJECT REPORT IS

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DECLARATION

I hereby declare that the work has been done by myself and no portion of the work contained in this thesis has been submitted in support of any application for any other degree or qualification of this or any other university or institute of learning.

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By God's grace, I was able to finish my Final Year Project 1 on time, I thank the God for giving me the strength required to finish up the project on time without much troubles.

Abstracts

This project is about a credit transfer system whereby credit transfer is a policy of comparing two syllabuses in order to check if both the syllabuses are compatible with each other. Syllabuses which are compatible could be credit transfer, which means there is no necessity to enroll the similar subject. This system is widely used in universities for credit transfer purposes. It allows the university management to compare the host syllabus, which is the syllabus from Faculty of Computers and Informatics, Multimedia University with the guest syllabus, whichever outside syllabus which needs to be compared in order to perform credit transfer. The aim of this system is to enable students to credit transfer similar subjects which will help students to complete their studies earlier and avoid them form retaking similar subjects. Credit transfer system keeps record of student's academic achievements and keeps track of the courses undertaken by student in their previous institution. Credit transfer system is beneficial for students who are changing universities and courses if the subject required in the new institution is similar to their previous institution.

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Chapter 1 Introduction

1.1 Project Overview

Credit transfer system is a system widely used in higher education institutes. Credit transfer system is used by universities and college to provide credit to students for the subject they have already taken in another institution. The function of this system is to keep record of the students' academic achievements and to keep track of the courses undertaken by students in other institutions.

Credit transfer system helps students who are changing universities and changing courses by transferring the credit of a taken subject to their current course as per requirements. Credit transfer can be done within an institute and among different institutions. For example, a Multimedia University student who is enrolling his/her Bachelor of Computer Science after completing his/her Diploma in Information Technology have already taken subjects such as Object Oriented Programming and Data Structure and Algorithm which can be credit transferred to Object Oriented Programming and Data Structure(OOPDS). By doing this, the student can save money and time as the knowledge learnt is the same. Moreover, a student who decides to change institution could also use credit transfer in order to avoid taking the similar subject. For instances, the subject Object Oriented Programming and Data Structure which is offered in Multimedia University can be credit transferred to Universiti Tenaga Nasional (UNITEN) for the subject Introduction to Object Oriented Using JAVA as both the subjects contain

the similar syllabus. A subject can be credit transferred with another subject if the syllabus and the credit hours of both the subjects are compatible with each other.

Credit transfer system has various benefits on students. Credit transfer system keeps track of students' academic progress and determine if student have met academic requirement. Furthermore, credit transfer system acts as a proof of previously taken subjects when enrolling in new course or institution. Credit transferring helps students by saving money and time when enrolling into new university.

In order to improve the existing credit transfer system, extra criteria should be added in the existing system. For example, the system should be able to convert both PDF format and scanned PDF format files into a text file in order to compare the compatibility of the subjects which needed to be credit transferred. This implementation will make the workload lesser for the user of the system.

1.2 Problem Statement

There many types of credit transfer system in the current market such as the European Credit Transfer and Accumulation System, Australian Group of Eight Universities Credit Transfer Agreement, ASEAN Credit Transfer System and the Asian Credit Transfer System. However, Multimedia University does not own a credit transfer system. Currently in Multimedia University, credit transfer is done manually by the coordinator of the subject. The coordinator compares certain criteria for both the subjects which need to be credit transferred. The steps taken for the manual credit transfer is comparing course name, comparing syllabus of both the subjects,

comparing the credit hour followed by comparing the reference book used to teach both the subjects. This manual method is time consuming and quite tiring.

1.3 Project Objectives

1. To design and implement a credit transfer system to be used for credit transfer of subjects.
2. To develop a system that is user friendly and easy to be operated.
3. To enable the user to obtain results of credit transfer without much hustle.
4. To reduce time consumption and workload by using credit transfer system instead of performing credit transfer manually.

1.4 Project Scope

The purpose of this project is to build a credit transfer system which will reduce time consumption to perform credit transfer. The scope of this project is to plan, design and implement a credit transfer system which converts both normal pdf files and scanned pdf files into text or word file. Then, feature extraction is done on the dataset where the important keywords are extracted. The keywords of the two subjects which need to be credit transferred will be compared to check for compatibility of those two subjects. Certain criteria such as course name, credit hour, textbook, syllabus content and subject grade will be cross-checked while performing credit transfer. Moreover, the idea of this project is also to build a credit transfer system which can be operated by Faculty of Computing and Informatics of Multimedia University.

1.5 Project Timeline

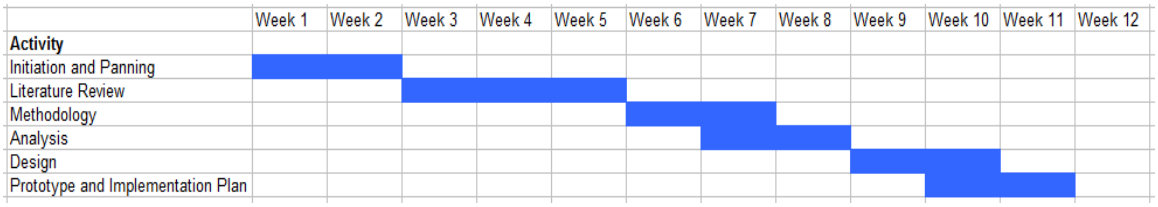

Figure 1.1 : Gantt chart of activities in FYP 1

Figure 1.1 shows the Gantt chart of the activities done in Final Year Project 1 in the time frame based on weeks. Initiation and planning took almost two weeks to be done, whereas literature review was done in three weeks. The methodology took two weeks to be completed and the analysis was started in the middle of doing the methodology. The design was started in week 9 and was completed in week 10. This was followed by making the prototype and implementation plan. Prototype and implementation plan was started in week the starting of week 10 and was completed in week 11.

Chapter 2 Background Study

2.1 Existing System Studies

2.1.1 European Credit Transfer and Accumulation System (ECTS)

Figure 2.1: Logo of European Credit Transfer and Accumulation System

Figure 2.1 shows the logo of the European Credit Transfer and Accumulation System. European Credit Transfer and Accumulation System (ECTS) is the most widely known and cited credit transfer system. ECTS is used across the European Union and some other collaborating European countries. ECTS allows students to collect credits for learning achieved through higher education. The purpose of ECTS is to help in student mobility as well as planning, delivery, evaluation, recognition and validation of qualifications and units of learning.

European Credit Transfer System (ECTS) measures and compare learning outcomes and helps students to transfer credit from one higher education institute to another institute across European Union countries. ECTS enables students from European Union countries to go to a foreign country and do a degree that will be accepted throughout the European Union countries. These are the top international destinations which uses the ECTS credit system; United Kingdom, Germany, Netherlands, Spain, France, Ireland and Sweden.

European Credit Transfer System (ECTS) credit works in a certain way. ECTS credit points represent the student's workload in a particular phase of time. The ECTS credit differs in each country. In certain countries like Austria, Italy and Spain, 1 ECTS credit is equivalent to 25 study hours whereas in Germany, Belgium, Romania and Hungary, 1 ECTS credit is equivalent to 30 study hours. Study hour of courses are just estimation as the time students spend on each subject differs according to the student's understanding and familiarity towards the subject. For example, students will spend more time on a subject they are not familiar with compared to a familiar subject.

The purpose of ECTS is to make grades more comparable to each other. ECTS grading can vary with students' group size because it is based on student's performance. ECTS grading also depends on how competitive the students are. This is because ECTS grading is based on class percentile.

Table 2.1: Advantages and Disadvantages for European Credit Transfer and Accumulation System.

Advantages	Disadvantages
Description of available study programs at European institutions	Over-standardization of European education
Student exchange programs enables the recognition of studies abroad	Incompatible with local educational traditions
All the course descriptions have English translation	

2.1.2 Australian Group of Eight Universities Credit Transfer Agreement

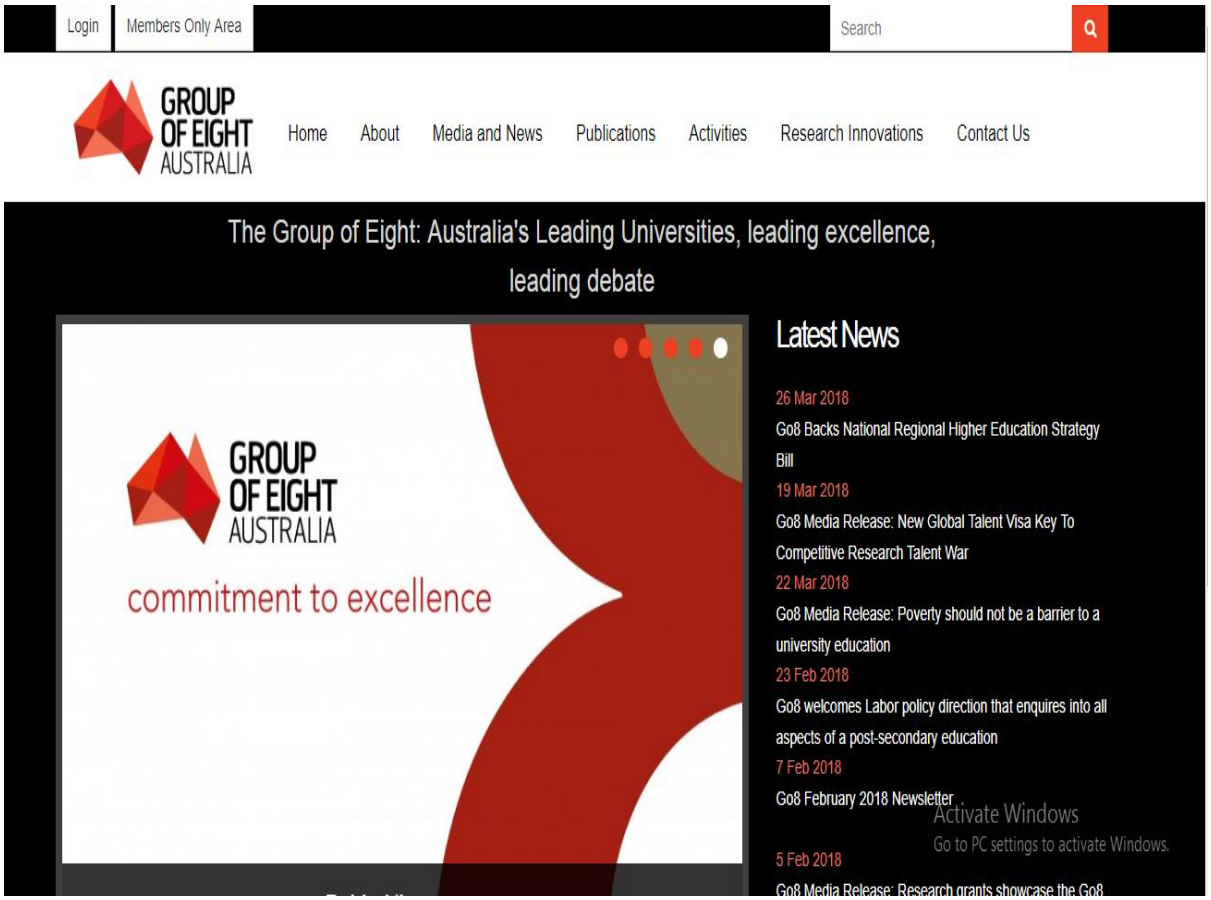

Figure 2. 2: Main page of Australia Group of Eight Universities Credit Transfer Agreement

Figure 2.2 shows the main page of the Australia Group of Eight Universities Credit

Transfer Agreement

Figure 2. 3: The Australia Group of Eight Universities

Figure 2.3 shows the eight universities involved in this credit transfer system. The Australian Group of Eight Universities consists of the Australian National University, Monash University, the University of Adelaide, the University of Melbourne, the University of New South Wales, the University of Sydney, the University of Queensland and the University of Western Australia. The Australian Group of Eight Universities Credit Transfer Agreement enables credit transfer to take place between these universities. The academic expectations and assessment at all the Group of Eight Universities are comparable and transferable which is the starting point of the agreement was. Moreover, this credit transfer agreement is also to maximize opportunities for mobility of students between them by facilitating the transfer of credits earned at one of the eight universities to another Group of Eight Universities.

Student has to successfully complete appropriate units of study at a Group of Eight university to be able to enroll and to transfer credit in another Group of Eight university. Students who have completed a recognized component of study at Group of Eight University in all degree programs are eligible for credit transfer. The requirements to transfer a student is to complete at least one year of equivalent full-time study or a minimum of 50% of the relevant degree program from the university which they graduate and students must also meet requirements of the degree program which they enroll.

2.1.3 ASEAN Credit Transfer System

Figure 2.4 till Figure 2.6 shows the interface of the ASEAN Credit Transfer System.

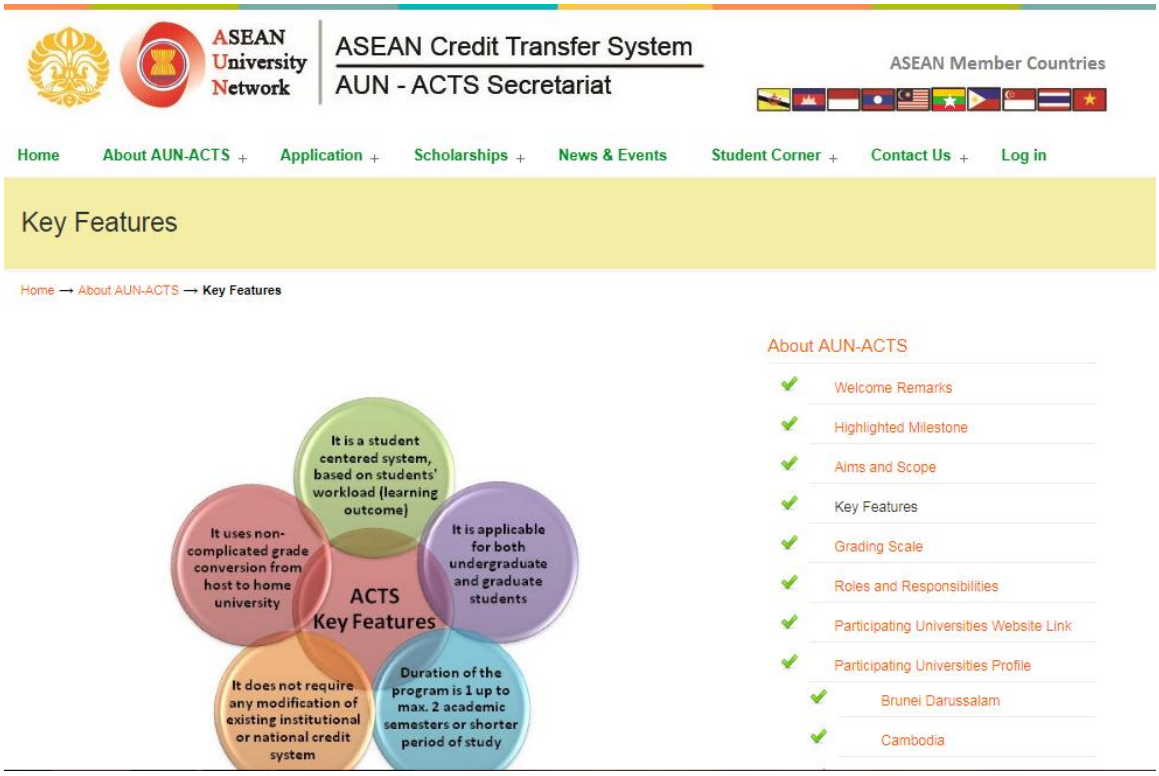

Figure 2. 4 : ASEAN Credit Transfer System main page

Figure 2.4 shows the main page of the system. Once log in is pressed, the website will direct user to webpage as shown in Figure 2.5. The features of this website are Home, About AUN-ACTS, Application, Scholarships, News & Event, Student Corner, Contact Us and Log In.

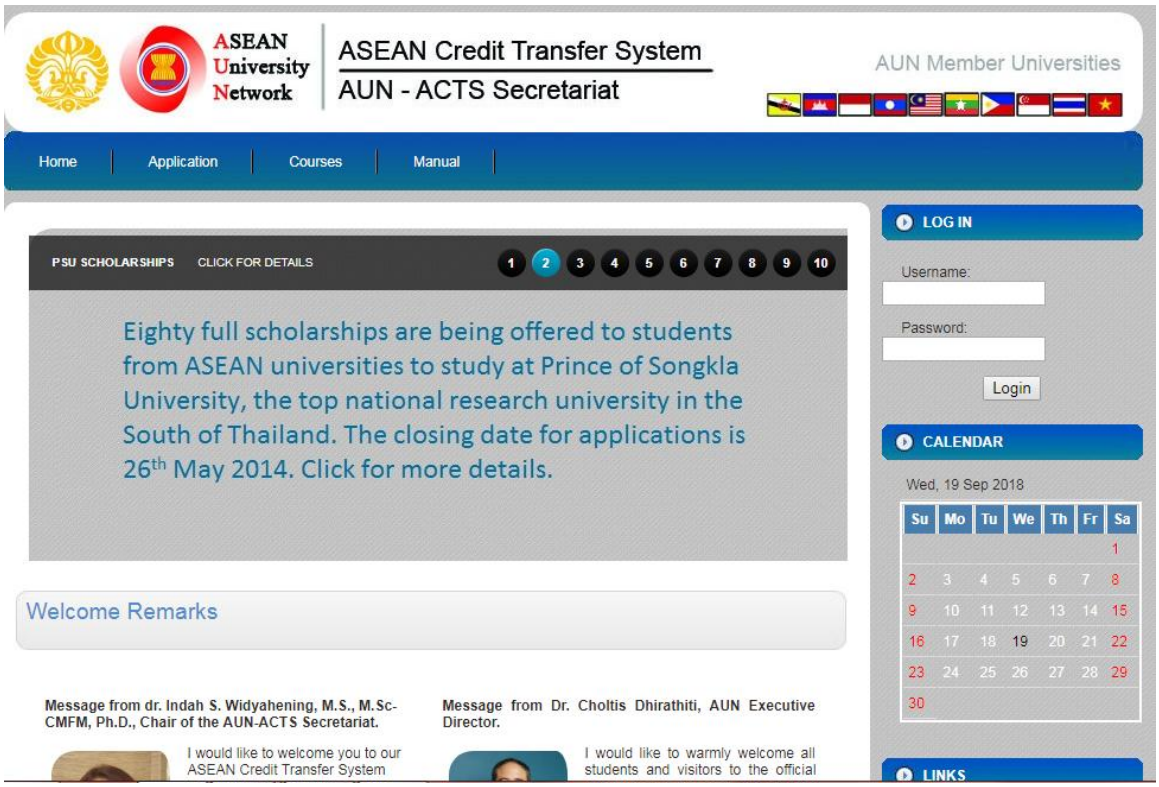

Figure 2. 5 : ASEAN Credit Transfer System log in page

Figure 2.5 shows the log in page of the system. There are few features for this system such as Home, Application, Courses and Manual.

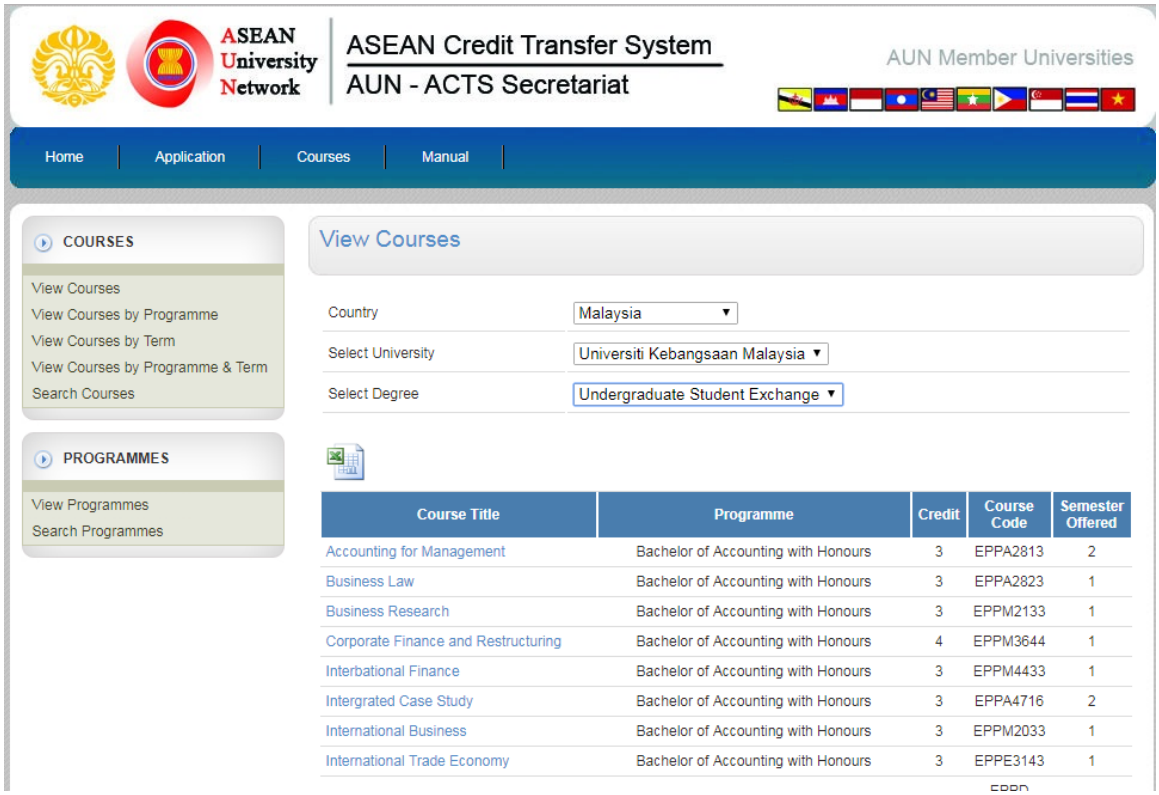

Figure 2. 6 : ASEAN Credit Transfer System courses interface

Figure 2.6 shows the courses interface of this system. Once the user select the country, university and the degree program, the information of the courses offered is shown.

The ASEAN Credit Transfer System (ACTS) was initiated by the ASEAN University Network (AUN). The objective of this credit transfer system is to facilitate student and academic mobility in ASEAN.

ACTS consists of the grading scales, online list of available courses and online application system. AUN has proposed a standardized credit transfer system to facilitate and promote mobility of students leading to the adoption of ACTS Concept Paper in March 2009 because the differences between various credit transfer system in ASEAN turns out to be one of the main barrier to the mobility and exchange of students within the region. ACTS prioritizes students' workload which is the learning outcome. Moreover, ACTS is applicable to student exchange in the duration of maximum two academic semesters or a shorter period of study if deemed necessary. For the expression and conversion of credits, study periods and learning outcome achievements, ACTS will consider the existing institutional and national credit transfer systems. However, ACTS will not require a modification of the existing institutional or national credit transfer systems.

2.1.4 Asian Credit Transfer System (ACTS)

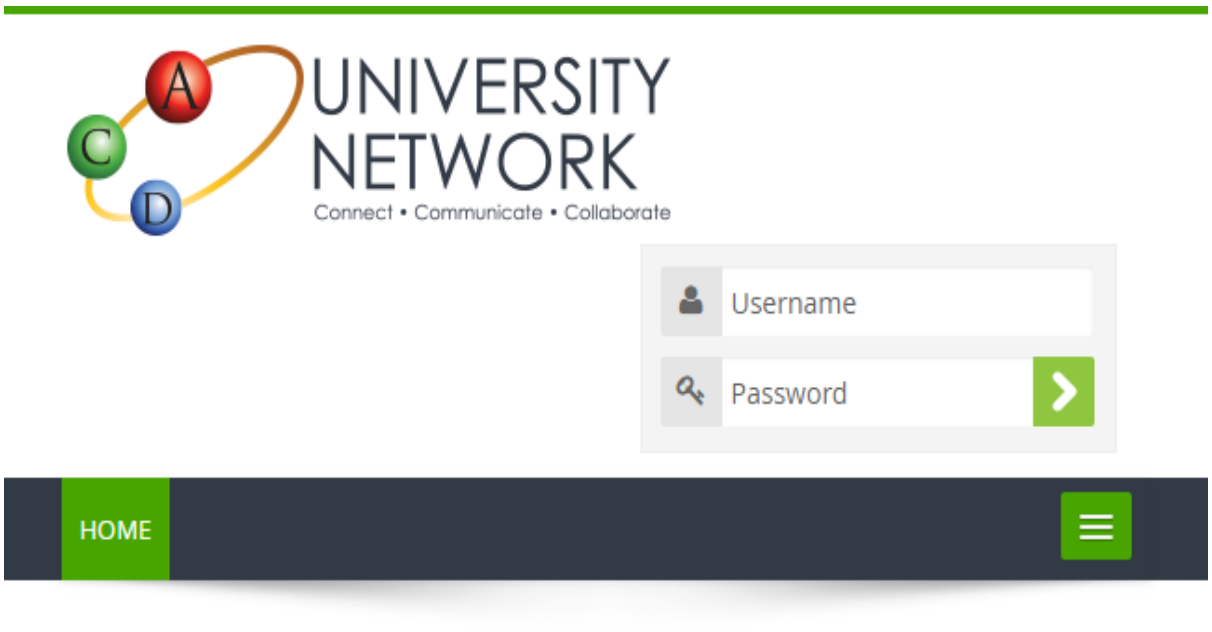

Figure 2. 7 : Main page of ACD University Network

Figure 2.7 shows the main page of the Asian Credit Transfer System (ACTS) which is coordinated by Asia Cooperation Dialogue (ACD). Asia Cooperation Dialogue (ACD) is an intergovernmental organization that consists of 34 states. ACD University Network (ACD-UN) is the main coordinator to facilitate the Academic Exchange Collaboration on innovation among proactive and internationally focused universities in ACD countries.

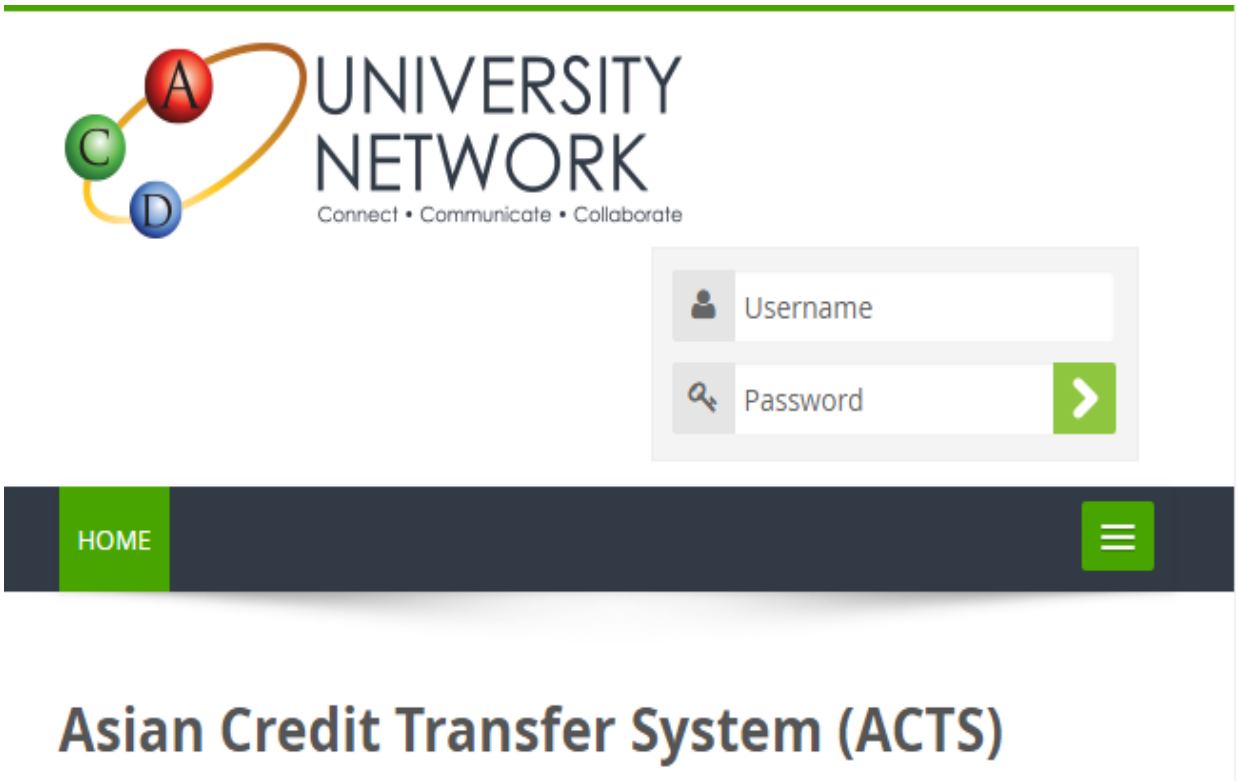

Figure 2. 8 : Main page of Asian Credit Transfer System

Figure 2.8 shows the main page of the Asian Credit Transfer System (ACTS). Users have to login using username and password. Asian Credit Transfer System (ACTS) provides necessary instrument for understanding and comparing different education systems, mutual recognition of academic and professional qualifications, increase collaboration between universities and encourage understanding and development of what is truly Asia.

There are six key objectives in ACTS. Firstly, ACTS act as a tool to help in the design, description of the amount of learning achieved and academic demands of that learning and delivery of programs. Moreover, ACTS facilitates Asian Higher Education Institutions for granting credit to a student for educational experience or courses

undertaken at another institution. ACTS also acts as an instrument that allows mutual comparison of programs for credit transfer and accumulation of the credit load requirements for an academic award of home institution. The objective of ACTS is also to make it possible to integrate different types of lifelong learning perspective in providing opportunities for lifelong learners to access higher education. Other than that, ACTS is also there to promote students or staff mobility within ACD-UN by easing the process of recognizing qualifications and periods of study. Last but not least, ACTS also make recognition of credit transfer applicable to all programs regardless of the mode of delivery or the status of students or learning contexts. Different ACD countries have different credit load and different learning hours.

2.2 Technology Review

Python

The reason for using python programming language is because python can be used to accomplish natural language processing task which is needed in this system. Python is an open source programming language where open source python frameworks, libraries and development tools can be used. As an intermediate python learner, I started picking up python language these few weeks in this long semester. Online python code samples and explanation helped me throughout this learning journey.

Microsoft Visual Studio

Microsoft Visual Studio is an IDE which is used to develop computer programs, websites, web apps, web services and mobile apps. Visual studio supports 36 programming

languages including python which is why visual studio has been chosen to be used to do this system.

2.3 System Comparison Table

Table 2. 2 : Comparison table of existing system

System Features	European Credit Transfer System (ECTS)	Australian Group of Eight Universities Credit Transfer Agreement	ASEAN University Network(AUN) Credit Transfer System	Asian Credit Transfer System (ACTS)	MMU Credit Transfer System (Proposed)
Observation of grade	✓				✓
Observation of syllabus					✓
Observation of credit hour	✓	✓	✓	✓	✓
Observation of learning outcome	✓	✓	✓	✓	
Observation on textbook					✓

2.4 Multimedia University Credit Transfer System (Faculty Briefing, 2018)

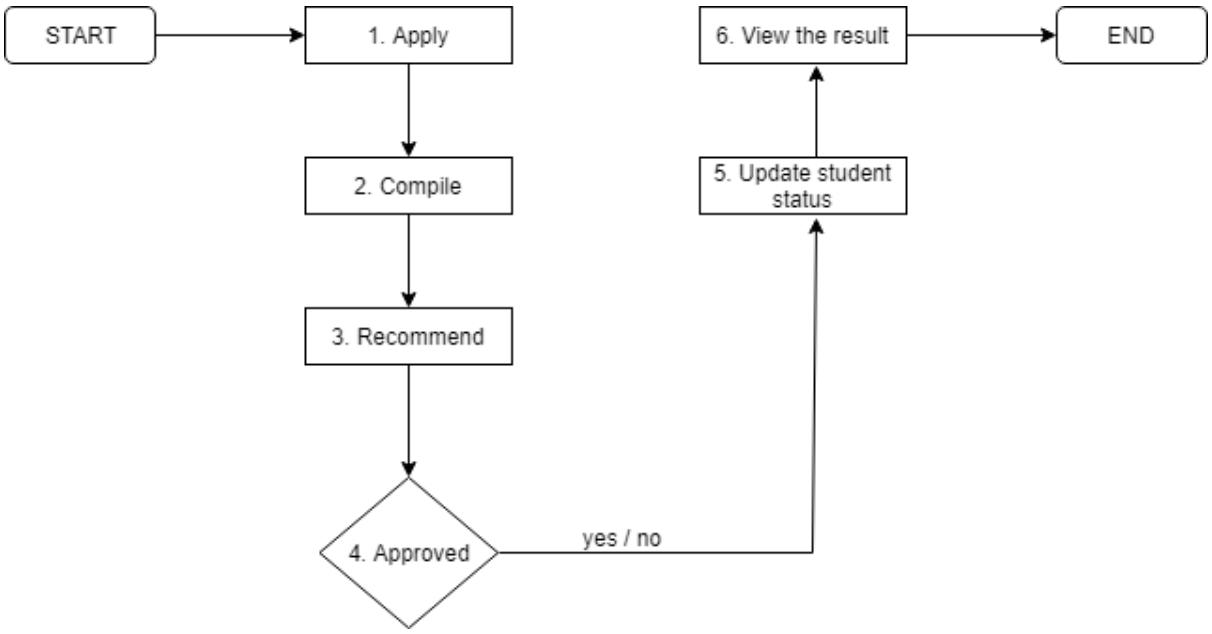

Figure 2. 9 : Flowchart of Multimedia University credit transfer procedure

Figure 2.9 shows the flowchart of Multimedia University's credit transfer procedure which is done manually all this while. Below is the explanation of the steps.

1. Apply

The credit transfer timeline is normally within the first two weeks of the long semester and within one week of the long semester. The announcement regarding the dates will be done during faculty briefing. Basically, students have to apply for credit transfer online but manual application will be considered on a case by case basis. During application, students have to submit supporting documents.

2. Compile

The faculty will receive a notification email and will compile the generated list of students who submitted the supporting documents. The compiled information will be sent to Credit Transfer Committee/FAC Department for recommendation. Moreover, supporting documents must be complete in order for the form to be processed.

3. Recommend

Credit Transfer Committee or Subject Coordinator will evaluate the supporting documents submitted to check eligibility for credit transfer. FAC will evaluate Mata Pelajaran Umum (MPU) subjects.

4. Approved

Dean or Deputy Dean must examine the recommended credit transfer list for approval.

5. Update student status

The status of the credit transfer will be updated in CAMSYS. If student registered for the subject which was successfully credit transferred, the subject will be automatically dropped.

6. View the result

Students have to check their credit transfer application whether approved or disapproved on the 4th week of new semester in CAMSYS.

Credit Transfer Policy of Multimedia University

These are the general credit transfer policy of Multimedia University:

1. The syllabus of the subject to be credit transferred must cover at least 80% syllabus of the corresponding subject at Multimedia University.
2. The credit hour of the subject for credit transfer must be equivalent or more than the credit hour of the subject offered by Multimedia University.
3. The grade obtained for the subject offered for credit transfer should be at equivalent to at least Multimedia grade C.
4. Subjects from recognized certificate programs (MQF level 3 or Diploma programs) can be considered for credit transfer.
5. Transfer of credit from a higher level program to a lower level program is not permitted. Eg: degree to diploma.

2.5 Natural Language Processing (NLP)

Natural language processing is a field if study that focuses in interactions between human language and computers. Computers use natural language processing as a way to analyze and derive meaning from human language. Natural language processing could be used for relationship extraction and topic segmentation. Topic extraction is used for information extraction to automatically extract relevant terms. Natural language processing is used to process human or natural languages.

This process is broken down into three segments. The first part is to understand the natural language. Then the computer performs a speech recognition that converts the natural language to programming language. The result in text format statistically

determines the words that were most likely said. This process is the speech-to-text process. The next task is part-of-speech (POS) tagging. In this process, the words will be identified in their grammatical forms. Now, the computer understands the meaning of the speech. Finally, the text-to-speech conversion is done. Then the computer

programming language is converted into textual format. Language is one of the easiest things for humans to learn but the natural language processing is hard for the computer to master. Natural language processing is one of the hard problems in computer science.

2.5.1 Information Extraction

Information extraction is done based on keyword and key phrase extraction. Key phrases refer to the important point of dataset in a readable manner. Keyword extractions are divided into individual keyword extraction and key phrase extraction and derivation. Individual keyword extraction refers to extracting single word with unique meaning such as topic whereas key phrase extraction refers to phrase which contains more than a word such as credit value.

There are three main steps in carrying out information extraction based on keyword extraction. The steps are preprocessing, keyword extraction and key phrase extraction. In the preprocessing step, noise removal will be done in order to eliminate unnecessary words. Clustering will be done on keywords. However, for the key phrase extraction once the part-of-speech is done, key phrase will be blended with individual keywords if it is necessary for the dataset.

Chapter 3: Methodology

3.1 Software Development Life Cycle

In this credit transfer system project, agile system development life cycle is used as the method for development. This is because agile SDLC model is a combination of iterative and incremental process models. An agile model consists of these six phases:

- Planning
- Requirements analysis
- Design
- Coding
- Unit testing
- Acceptance testing

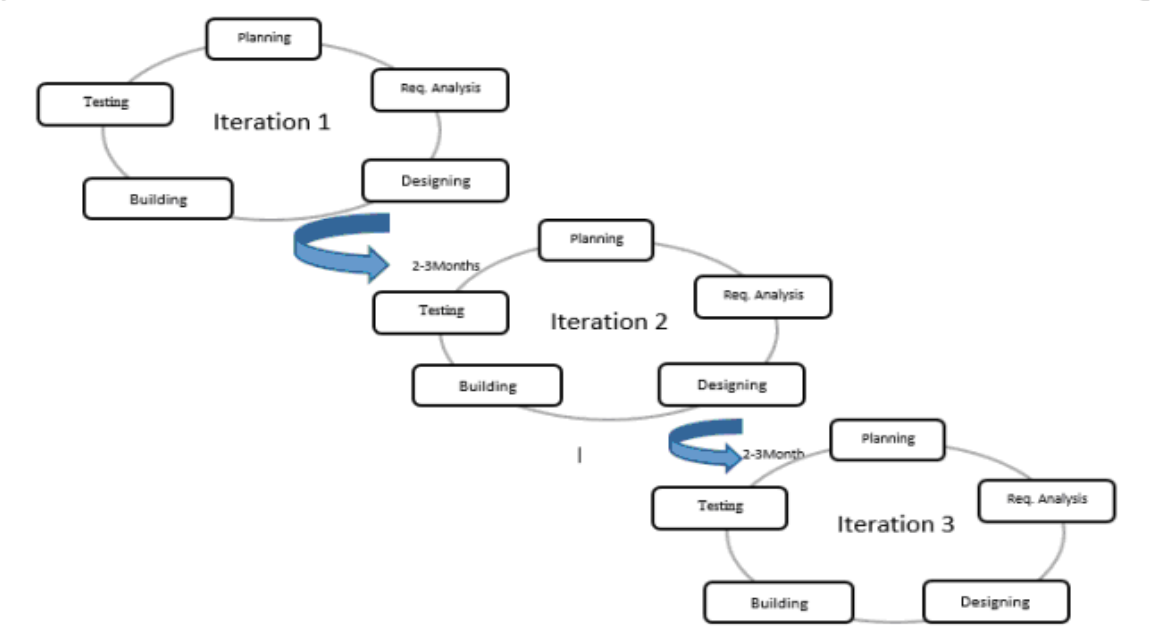

Figure 3. 1 : Agile Process Model

Figure 3.1 shows the graphical illustration of the agile process model.

Agile methods is implemented in this project because the functionality of this system can be developed rapidly and demonstrated. By using this method, the project can be divided into small incremental builds as it will be easier to respond to changes if needed for modification to improve this project. The given time frame to develop this project is two trimesters, so agile model method will be the most suitable method to be done in this short time frame.

Agile method

Planning

Development of a system is mainly about planning at the beginning phase. Studies are carried out on the literature review done based on the existing systems available and Multimedia University credit transfer policy. Based on Multimedia University policy, ideas are gathered on how to develop a credit transfer system.

Requirement analysis

This is a crucial stage of the system development life cycle. In this stage, the idea gathered in the planning stage will be used to fulfill the objectives of the system. The questions asked and answered :

1. Who is the user of the system ?

This system will be managed by the management of universities or colleges for credit transfer purposes.

2. How will the system benefit others?

This system will be used for credit transferring of subjects, so this system will reduce time consumption and workload of the management in order to perform the credit transfer.

Design

A prototype of the system is designed to give a rough idea on the functionality of the system. For the prototype, a converter is implemented to convert the pdf files to a text file. The framework of this system is done using https://www.draw.io/ , an online site for drawing diagrams. This framework is the best way to explain the requirements and plan of the system.

Coding

The creation of the system was divided into modules and the coding was done Visual Studio and python. This was the main part to be focused in developing the system. This process of the agile model takes a longer time to complete.

Unit testing

Testing was done to detect and fix bugs. The bugs were solved in the process of delivering a running application. If there are changes and new idea which needs to be implemented to develop a better system, the next iteration takes place. Coding was done and a running application was delivered.

Acceptance testing

The system is tested in order to check its compatibility and acceptability. This testing is done to evaluate the system's compliance with the project requirements and to test whether it is acceptable for delivery.

3.2 Framework of Credit Transfer System

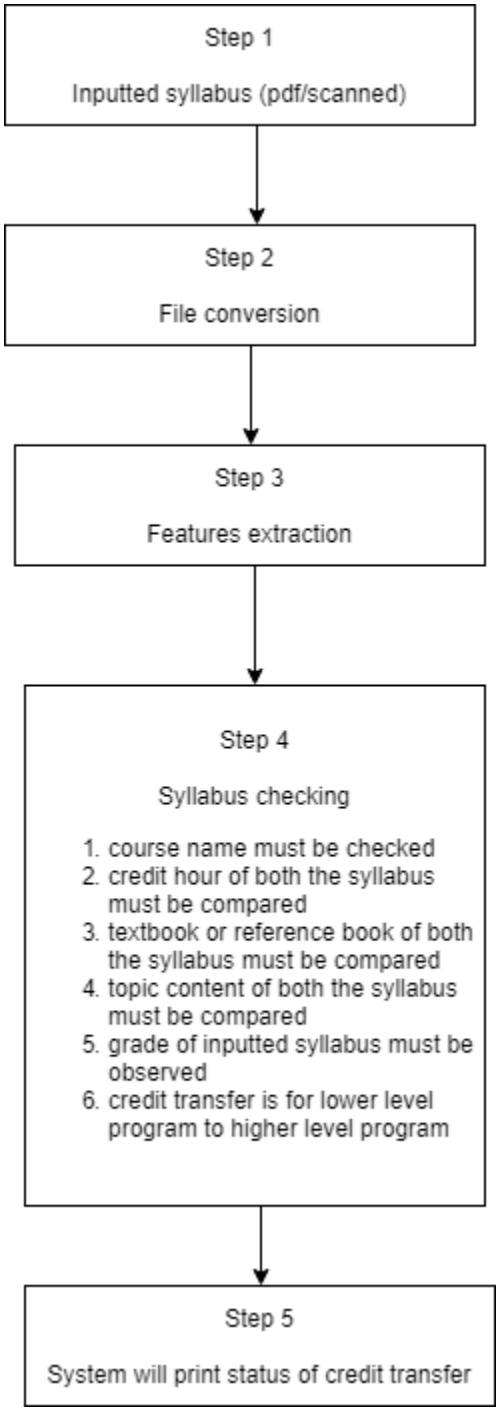

Figure 3. 2 : Framework of the proposed system

Step 1 – Input syllabus

In this step, a pdf file is inputted into the system. The syllabus can be in two formats which is the format of a normal pdf or in a scanned pdf format. This pdf file contains the syllabus of the subject which will be tested for credit transfer.

Step 2 – File conversion

In step 2, file conversion is done by using two online converters. The first converter converts the pdf file format to a docx file format. For this part the online convert from this link "https://simplypdf.com/" was used. Another online converter which converts the docx file format to a text file format is used. For the conversion of docx file format to text docx format, online converter from this link "https://www.gemboxsoftware.com/document/examples/c-sharp-convert-word-pdf-html/304" was used.

Step 3 – Features extraction.

In this step, features extraction will be done. Feature selection and feature extraction is the preprocessing part. Feature selection is a process of selecting features which explains the targeted variable as well as to remove redundancy from dataset. Moreover, during feature selection, subset of the original features is kept. On the other hand, feature extraction transforms the features of the dataset and creates new features.

Step 4 – Syllabus checking

In this step, four criteria of the inputted syllabus namely the course name, credit hour, textbook and topic will be checked. Syllabus checking is done in order to decide whether

a syllabus is suitable to be credit transferred. Basically, the course name of the inputted syllabus will be checked with the host syllabus and if this criterion is fulfilled then the comparison for the next criteria can be done. This is because, once the precondition of the credit transfer is not fulfilled, then it is not necessary to perform the syllabus checking with the next criteria. For example, there is a subject titled Object Oriented Programming in FCI Diploma which can be compared for credit transferred with Object Oriented Programming and Data Structure in FCI Degree course. So, in this case, the course name of these subjects is firstly compared for credit transfer. Consequently, if the comparison of course name is showing an unsuccessful, it is not necessary to carry on the following criteria for syllabus checking.

Besides that, credit hours of subjects are also compared for credit transfer. Two subjects with equal credit hour can be credit transferred and a subject with higher credit hour can be credit transferred to a subject with lower credit hour but a subject with lower credit hour cannot be credit transferred with a subject with lower credit hour. However, two subjects with lower credit hour can be credit transferred to one subject with a higher credit hour. For instance, Object Oriented Programming and Data Structure are two different subjects in FCI Diploma course. Both the subjects have 3 credit hours each. In FCI Degree there is a subject titled Object Oriented Programming and Data Structure (OOPDS) which has 4 credit hours. So, in this case the two Diploma subjects can be credit transferred with one Degree subject because the accumulated credit hour for the Diploma subjects will be 6 credit hours.

Other than that, textbook or reference book will also be compared for syllabus checking. This is because the subject content in most university might not be the same

but the usage of reference book might be the same. From here, it could be concluded that there is similarities in the two subjects if the reference book used is the same.

Furthermore, the topic or syllabus of both the host subject and the subject which needs to be credit transferred will be compared. The comparison will be done to the extracted keywords from Step 3 using Natural Language Processing. Basically, the keywords extracted from both the syllabus will be compared to find similarities. According to Multimedia University credit transfer policy, there should be at least 80% similarities in both the subjects which are compared for credit transfer.

In addition to it, the grade of the subject will also be considered for credit transfer. A subject is eligible for credit transferred to Multimedia University with a minimum grade of C. Lastly, credit transfer is only possible for lower level program to higher level program. For example, diploma subjects can be used to credit transferred to enroll into degree but degree subjects cannot be used to credit transferred to enroll into diploma. Credit transfer is only done for higher level program.

Step 5:

In this step, after all the criteria of credit transfer are cross-checked, the system prints the status of credit transfer for the specific syllabus. The final status of the credit transfer could possibly be; credit transfer successful, credit transfer unsuccessful or syllabus will be sent to committee for further inspection.

Chapter 4: Proposed Solution

4.1 Dataset Characteristics

Table 4. 1 : Dataset Characteristics

Institute / Characteristic	Multimedia University	INTI International University
PDF format	PDF	Scanned PDF
Subject	Name of Course	Name of Course/Module
Credit hour	Credit value	Credit value
Topic	Course content Outline	Topics
Textbook	- Main references - Additional references	- Main reference(s) supporting course - Additional references

Table 4.1 shows the dataset characteristics of dataset obtained from two different institutes: Multimedia University and INTI International University. Few characteristics of the dataset and how what are the terms used to describe the characteristics such as pdf format, subject, credit hour, topic and textbook are compared in order to study the dataset. For example, the topic of the subject is called as course content outline in Multimedia University whereas in INTI International University it is referred as topics. The differences and similarities of the datasets are clearly stated in the table above. This information will be useful for syllabus checking.

4.2 Snapshot of prototype

Step 1 – Input syllabus

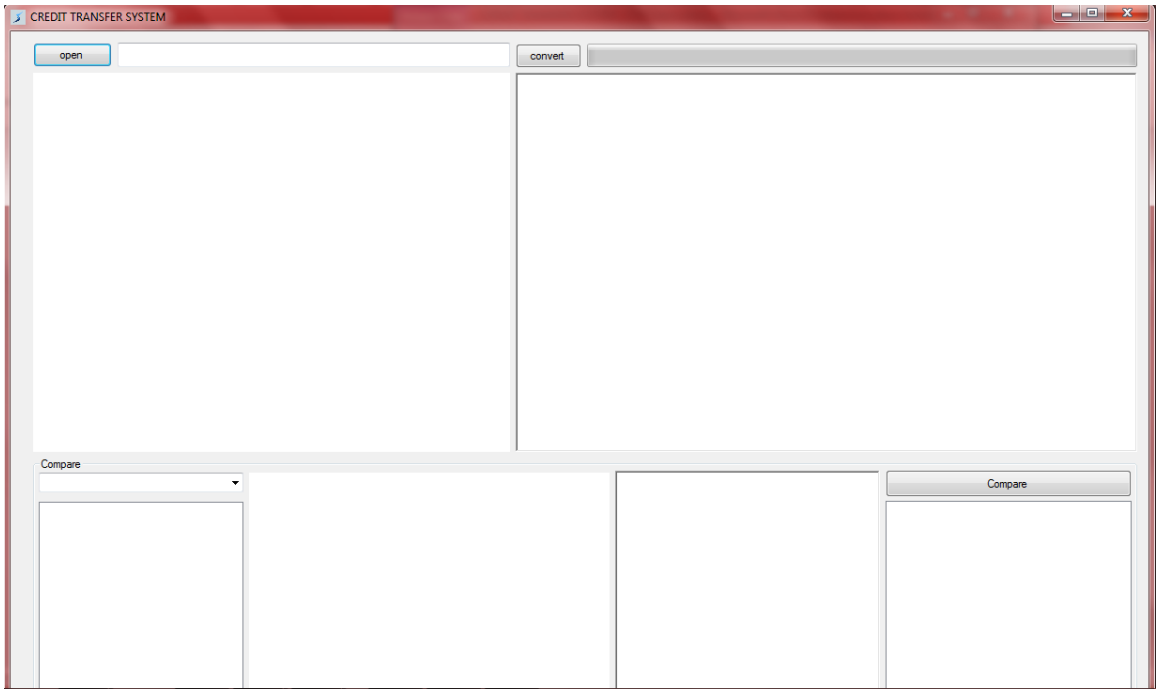

Figure 4. 1 : Main page

Figure 4.1 shows the main page of the credit transfer system. There is the Open button, Covert button and Compare button. The Open button is to open the pdf file which is needed to be converted.

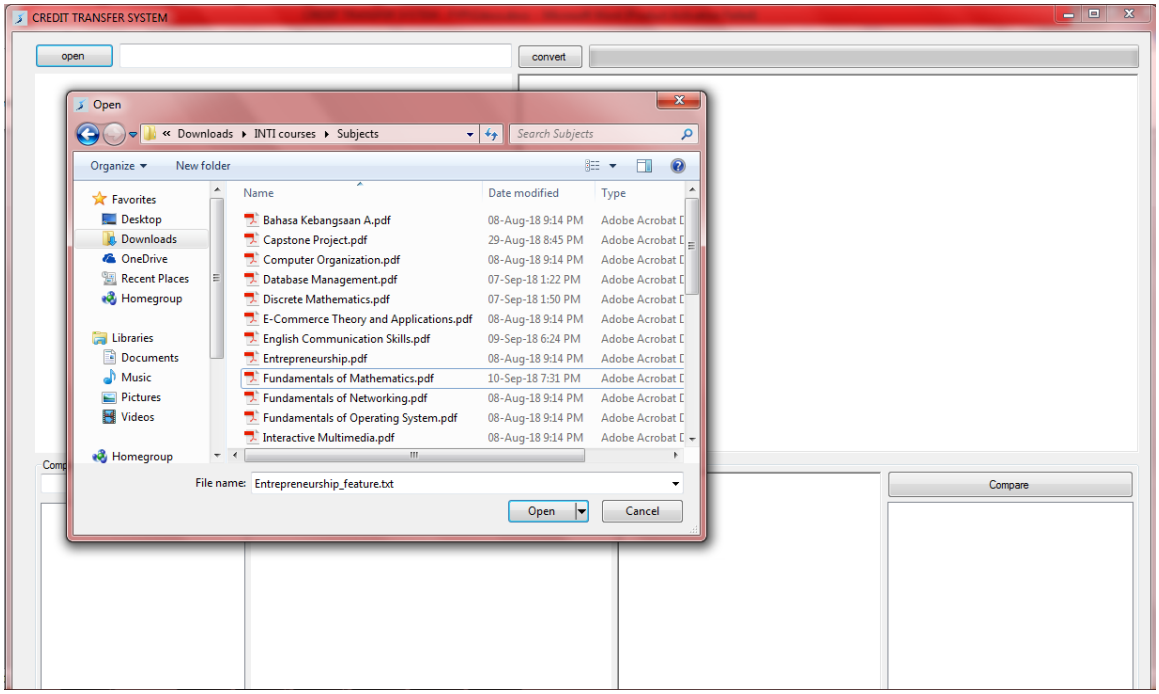

Figure 4. 2 : Open PDF file

Figure 4.2 shows the file explorer for the Open button. Once the Open button is pressed, the pdf file which needs to be converted can be chosen.

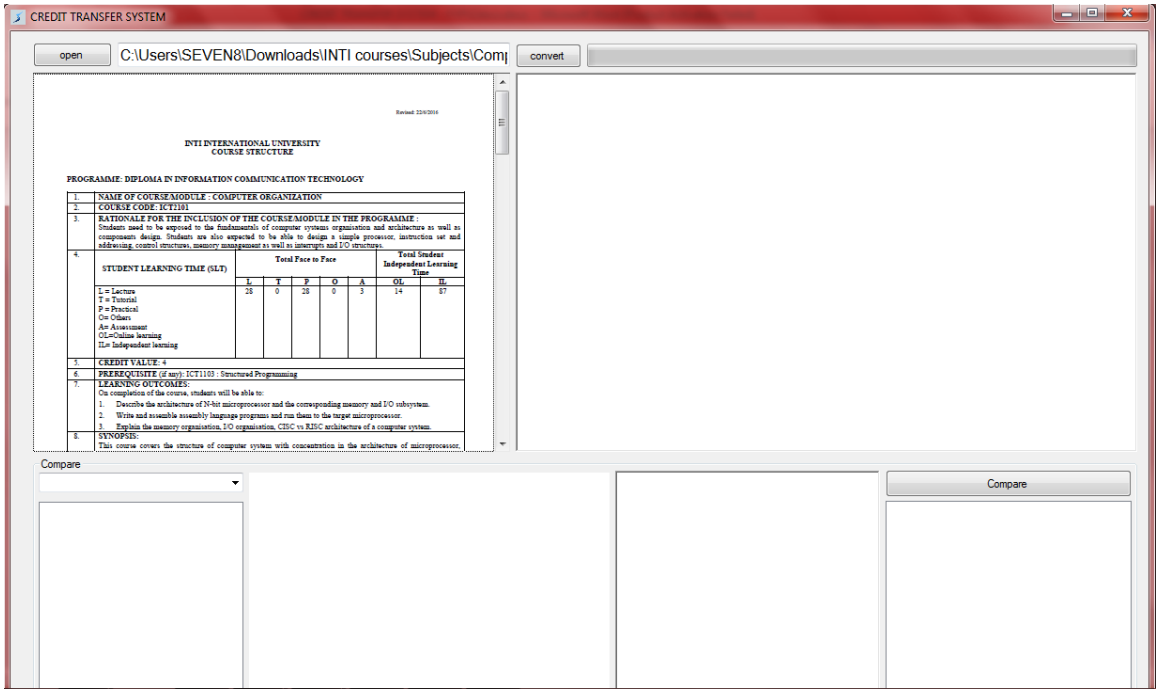

Figure 4. 3 : Display PDF file

Figure 4.3 shows the result when a pdf file is chosen. The pdf file will be displayed as such in figure above.

Step 2 – File conversion

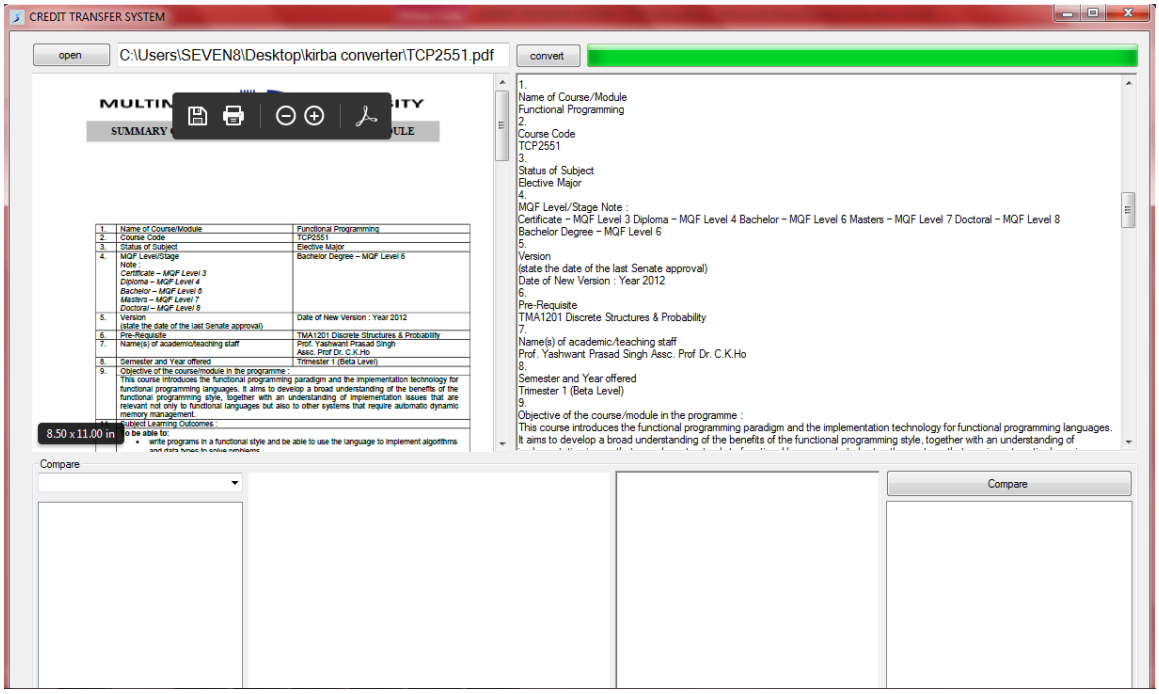

Figure 4. 4 : The Convert button

Figure 4.4 above shows the result of the file conversion from pdf format to text format. This picture illustrates the conversion of dataset from Multimedia University.

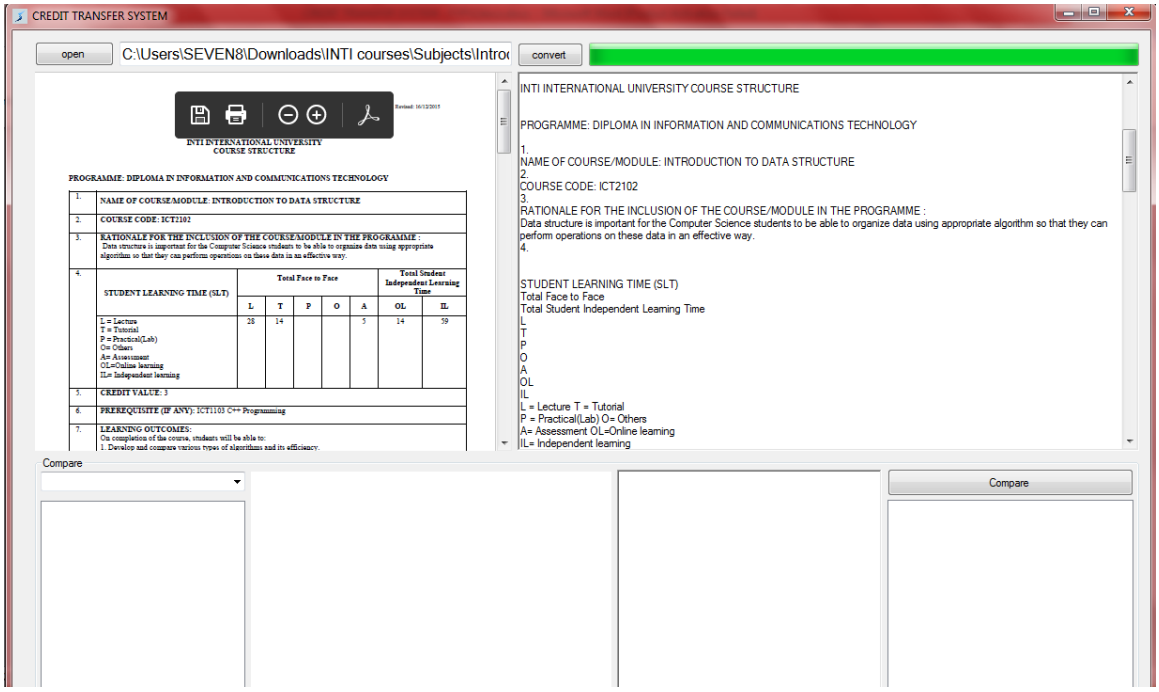

Figure 4. 5 : File conversion for INTI International University

Figure 4.5 shows the conversion done for the dataset from INTI International University.

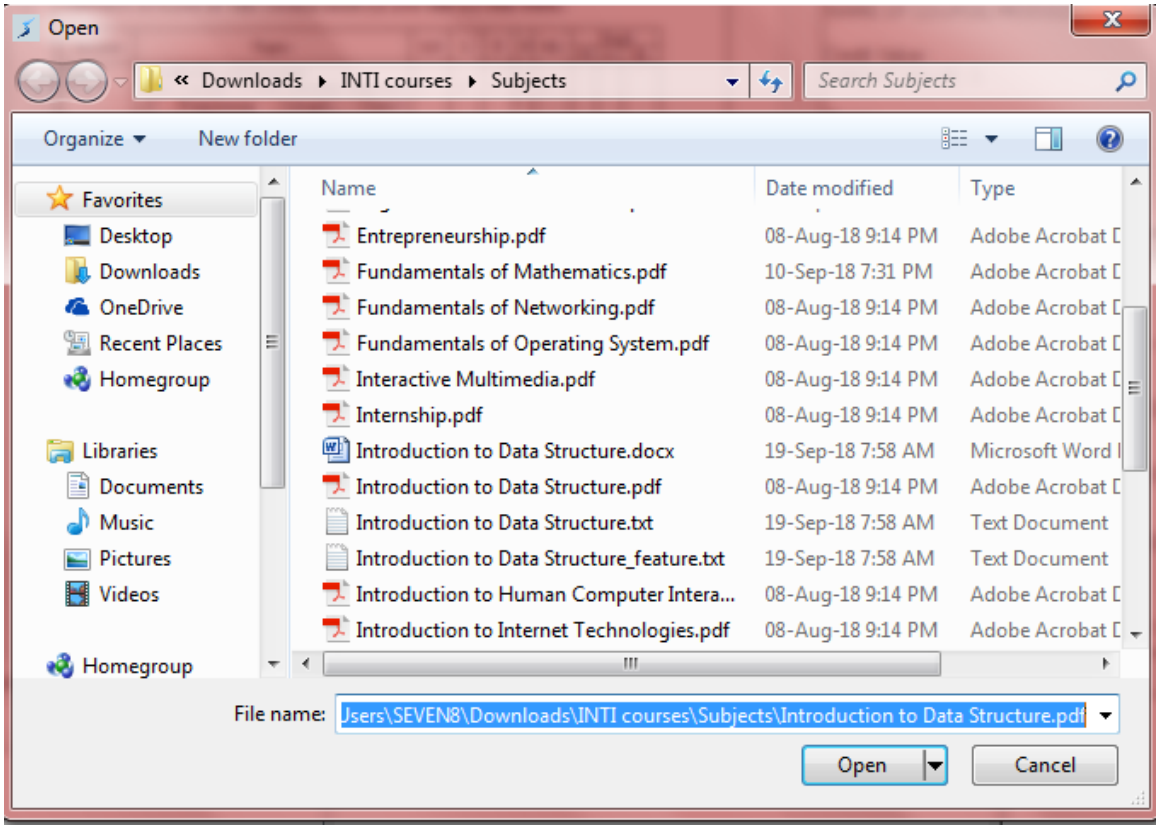

Figure 4. 6 : Docx and Text file generated

Figure 4.6 above shows the generation of docx file and text file after the conversion. The generated docx and text file will be saved in the same folder as the pdf file.

Step 3 – Features extraction

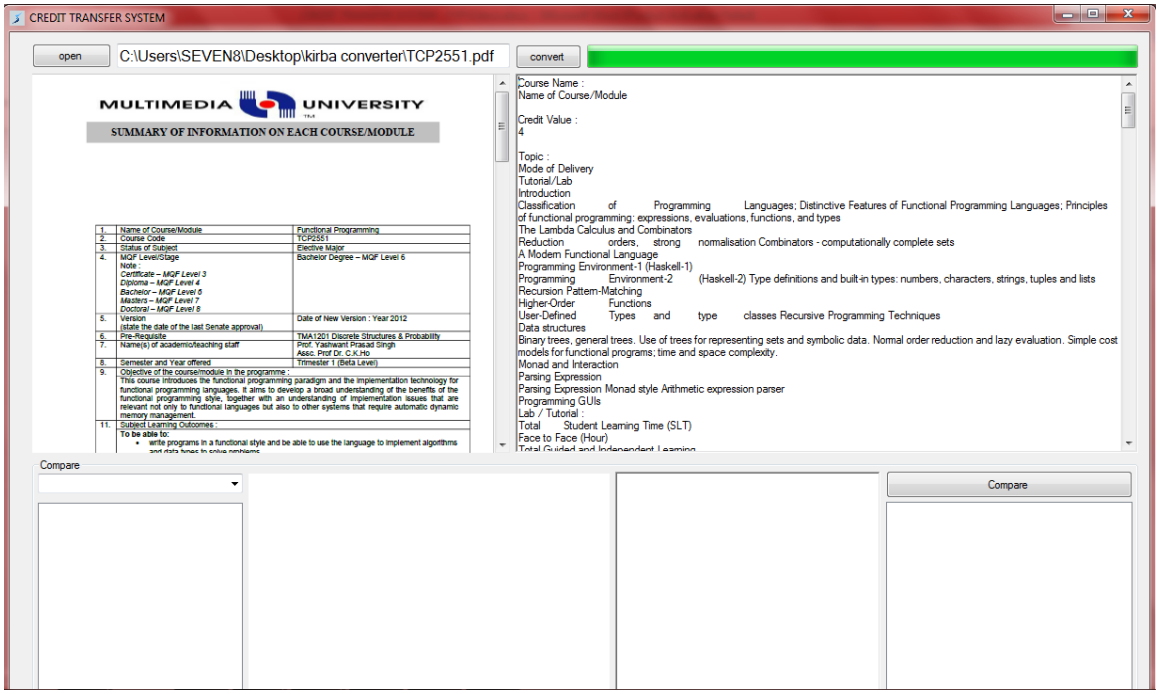

Figure 4. 7 : Feature extraction of Multimedia University part 1

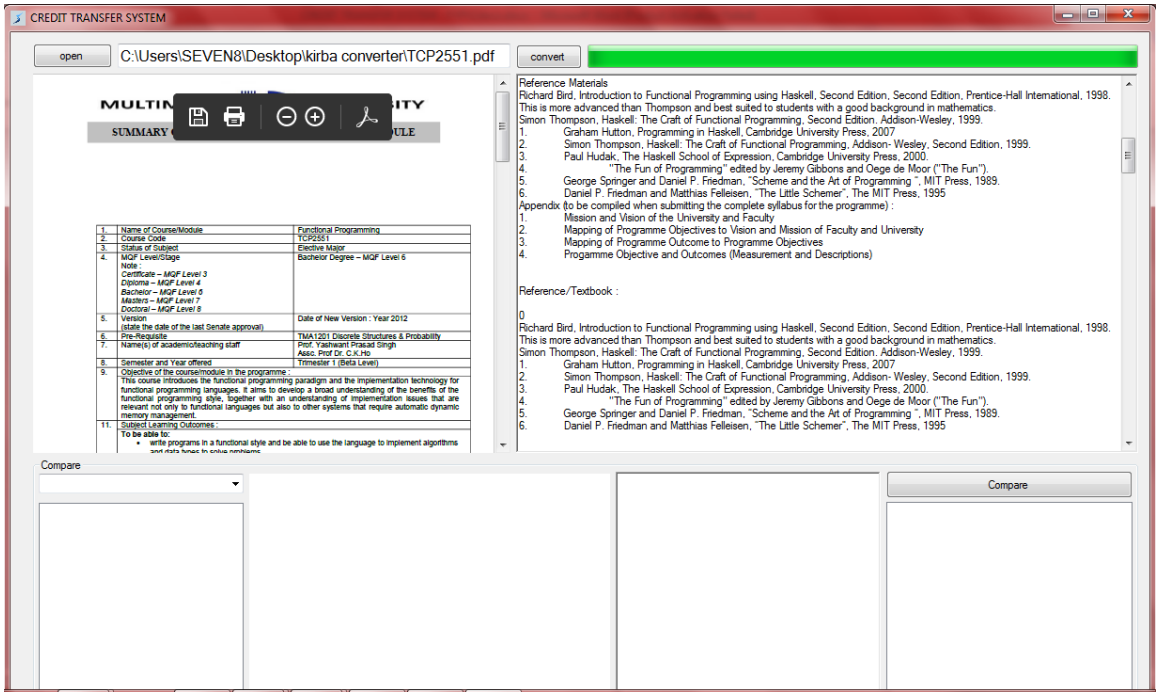

Figure 4. 8 : Features extractions of Multimedia University part 2

Figure 4.7 and Figure 4.8 shows the extraction done for the Multimedia University dataset. The course name, credit value, topic and reference have been extracted.

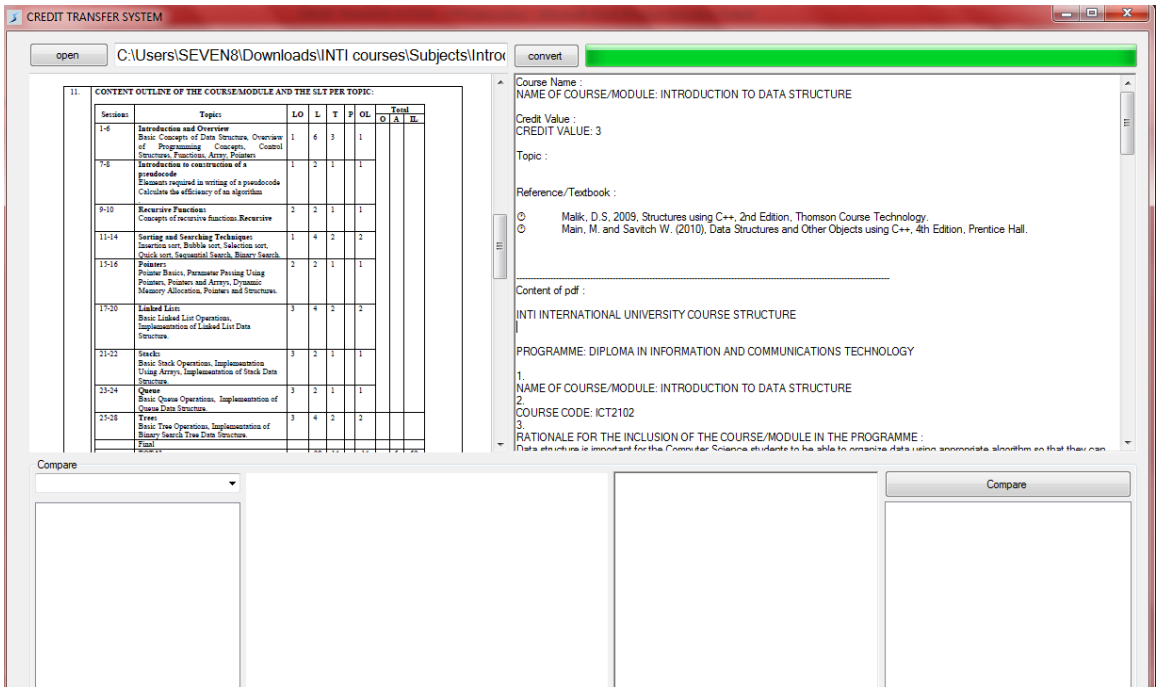

Figure 4. 9 : Features extraction (INTI International University)

Figure 4.9 shows the features extraction done for INTI International University.

Chapter 5 : Conclusion

5.1 Problem encountered

I encountered some problems while doing this project. First and foremost, it was a hard task to collect the syllabus for Computer Science from other universities as some of the universities had to go through some procedures and get approval from dean before giving out the syllabus. So, it was hard to get the syllabus. Secondly, some of the dataset of syllabus I received was in the form of scanned pdf, which cannot be converted into text file directly. So, I faced some difficulties to find a suitable converter which could convert scanned pdf files into text file. Furthermore, I also encountered problem while doing the literature review regarding the existing credit transfer system. This is because the existing system is mostly in foreign countries and the interface as well as the features of the system cannot be found.

5.2 Solution

Somehow, I managed to solve the problems encountered with the help and assistance of my supervisor. I managed to get syllabus from some of my friends and my supervisor emailed me few syllabus. Since I had pdf files which was in normal pdf and scanned pdf format, I managed to find two online converters which could convert both the pdf types. Besides that, I informed my supervisor that I have difficulties to find the features and interface of the existing systems.

5.3 : Conclusion

In a nutshell, this credit transfer system allows the management of an institution to compare two syllabus in order to perform credit transfer. This system will be useful for the user which is the management as the system provides the result of the credit transfer performed. This credit transfer system helps the user to save time and reduce workload by providing the final results. However, the might be results which is unclear and cannot be determined by the system, so the result of credit transfer will be "syllabus will be sent to committee for further inspection". This is because there are possibilities that the system could not perform it's 100% and deliver a perfect output. In such case, the syllabus will be sent to the credit transfer committee of the institution for further inspection.

References

(2018). *Faculty Briefing.* Cyebrjaya: Multimedia University.

“ASEAN CREDIT TRANSFER SYSTEM” http://apps.acts.ui.ac.id/index.php/home"

“NATURAL LANGUAGE PROCESSING” https://www.investopedia.com/terms/n/natural-language-processing-nlp.asp

“ASEAN UNIVERSITY NETWORK” http://www.aunsec.org/aunacts.php

“EUROPEAN CREDIT TRANSFER SYSTEM” http://www.accreditation.info/ects-certificate.html

“EUROPEAN CREDIT TRANSFER SYSTEM” https://www.uea.ac.uk/study/study-abroad/erasmus-new/ects

“EUROPEAN CREDIT TRANSFER SYSTEM” https://www.mastersportal.com/articles/388/all-you-need-to-know-about-the-european-credit-system-ects.html

"EUROPEAN CREDIT TRANSFER SYSTEM" https://ec.europa.eu/education/resources/european-credit-transfer-accumulation-system_en

"GROUP OF EIGHT AUSTRALIA" https://go8.edu.au/

"GROUP OF EIGHT AUSTRALIA" https://go8.edu.au/sites/default/files/docs/page/group_of_eight_universities_brochure_-_english_-final_low-res.pdf

"NATURAL LANGUAGE PROCESSING" https://blog.algorithmia.com/introductionnatural-language-processing-nlp/

"INFORMATION EXTRACTION" http://ceur-ws.org/Vol-706/poster13.pdf

"AGILE MODEL" https://www.tutorialspoint.com/sdlc/sdlc_agile_model.htm

APPENDIX A : MEETING LOGS

APPENDIX B : SUPPORTING DOCUMENTS