Course Outline

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Course Details

Course Code	COMP9024
Course Title	Data Structures and Algorithms
Convenor	Tatjana Zrimec (/users/z9200513)
Lectures	Monday 13:00-15:00 --> Livestream lecture Wednesday 15:00-17:00 --> Livestream lecture
Consultations	*Help Sessions:* Tuesday after 15:00 (week 2-10) Friday after 17:00 (week 2-10) *Virtual Meeting:* Tuesday 12:00 (week 2-10)
Units of Credit	6
Course Website	http://www.cse.unsw.edu.au/~cs9024 (http://www.cse.unsw.edu.au/~cs9024)
Handbook Entry	http://www.handbook.unsw.edu.au/postgraduate/courses/current/COMP9024.html (http://www.handbook.unsw.edu.au/postgraduate/courses/current/COMP9024.html)

Course Summary

Data structures are about how data is stored inside a computer for effective and efficient use. An algorithm is a step-by-step process for solving a problem within a finite amount of space and time. Data structures and algorithms are not only important in software design, but also in hardware design. Being proficient in data structures and algorithms are essential for good software developers, hardware developers, and system architects.

The actual content is taken from a list of subjects that constitute the basis of the tool box of every serious practitioner of computing: data types and data structures, abstract data types, dynamic data structures, analysis of algorithms and a variety of fundamental algorithms for graphs, trees and text processing.

Assumed Knowledge

Before commencing this course, students should

- be able to design, implement and test programs written in a procedural language;
- know simple data types and how to represent data with lists, stacks and queues;
- be able to implement basic search techniques and sorting algorithms.

These are assumed to have been acquired in the course COMP9021.

Student Learning Outcomes

After successfully completing this course, students will know fundamental data structures and algorithms, and they will be able to reason about their applicability, effectiveness and efficiency.

This course contributes to the development of the following graduate capabilities:

Graduate Capability	**Acquired in**
scholarship: understanding of their discipline in its interdisciplinary context	lectures
scholarship: capable of independent and collaborative enquiry	problem sets, assignments, in-class (live or recorded) quizzes
scholarship: rigorous in their analysis, critique, and reflection	in-class (live or recorded) exercises, problem sets, assignments
scholarship: able to apply their knowledge and skills to solving problems	problem sets and assignments
scholarship: capable of effective communication	forum
scholarship: information literate	lectures, problem sets, assignments
scholarship: digitally literate	lectures, problem sets, assignments
professionalism: capable of independent, self-directed practice	problem sets and assignments
professionalism: capable of operating within an agreed Code of Practice	all course-work, by doing it yourself
global citizens: culturally aware and capable of respecting diversity and acting in socially just/responsible ways	interaction with your fellow students

Teaching Strategies

- **Lectures** introduce concepts and show examples
- **Problem sets** reinforce concepts, provide additional examples and allow students to solve problems
- **Assignments** further reinforce concepts and allow students to solve larger problems

Teaching Rationale

Lectures will include exercises where we examine the practice of formulating and proving understanding and applying specific data structures and algorithms. Problem sets aim to deepen analysis and understanding via additional examples, problems and programming exercises. The large assignment give you the chance to practice what you have learnt on a larger problem.

Student Conduct

The **Student Code of Conduct** (Information (https://student.unsw.edu.au/conduct) , Policy (https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf)) sets out what the University expects from students as members of the UNSW community. As well as the learning, teaching and research environment, the University aims to provide an environment that enables students to achieve their full potential and to provide an experience consistent with the University's values and guiding principles. A condition of enrolment is that students *inform themselves* of the University's rules and policies affecting them, and conduct themselves accordingly.

In particular, students have the responsibility to observe standards of equity and respect in dealing with every member of the University community. This applies to all activities on UNSW premises and all external activities related to study and research. This includes behaviour in person as well as behaviour on social media, for example Facebook groups set up for the purpose of discussing UNSW courses or course work. Behaviour that is considered in breach of the Student Code Policy as discriminatory, sexually inappropriate, bullying, harassing, invading another one's privacy or causing any person to fear for their personal safety is serious misconduct and can lead to severe penalties, including suspension or exclusion from UNSW.

If you have any concerns, you may raise them with your lecturer, or approach the School Ethics Officer (mailto:ethics-officer@cse.unsw.edu.au) , Grievance Officer (mailto:grievance-officer@cse.unsw.edu.au) , or one of the student representatives.

Academic Honesty and Plagiarism

Plagiarism is defined as using the words or ideas of others and presenting them as your own. UNSW and CSE treat plagiarism as academic misconduct, which means that it carries penalties as severe as being excluded from further study at UNSW. There are several on-line sources to help you understand what plagiarism is and how it is dealt with at UNSW:

- Plagiarism and Academic Integrity (https://student.unsw.edu.au/plagiarism)
- UNSW Plagiarism Procedure (https://www.gs.unsw.edu.au/policy/documents/plagiarismprocedure.pdf)

Make sure that you read and understand these. Ignorance is not accepted as an excuse for plagiarism. In particular, you are also responsible that your assignment files are not accessible by anyone but you by setting the correct permissions in your CSE directory and code repository, if using. Note also that plagiarism includes paying or asking another person to do a piece of work for you and then submitting it as your own work.

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW staff and students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.

If you haven't done so yet, please take the time to read the full text of

- UNSW's policy regarding academic honesty and plagiarism (https://student.unsw.edu.au/plagiarism)

The pages below describe the policies and procedures in more detail:

- Student Code Policy (https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf)
- UNSW Student Misconduct Procedure (https://www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf)
- UNSW Plagiarism Procedure (https://www.gs.unsw.edu.au/policy/documents/plagiarismprocedure.pdf)

You should also read the following page which describes your rights and responsibilities in the CSE context:

- Essential Advice for CSE Students (https://www.engineering.unsw.edu.au/computer-science-engineering/about-us/organisational-structure/student-services/policies/essential-advice-for-cse-students)

Assessment

Component	Maximum Mark
Assignment 1 (Weekly assessments; weeks 3-10)	8 × 2 = 16
Assignment 2 (MidTerm Test; week 7)	12
Assignment 3 (Large Assignment; week 4-10)	12
Final Exam (exam period)	60

Your final overall mark will be the sum of your marks for each component provided that you pass the final exam.

To pass the course, the sum of your marks must be 50 or higher **and** the mark for the final exam must be 25 or higher.

Course Schedule

Elementary data structures and algorithms in C	week 1
Analysis of algorithms	week 2
Dynamic data structures	week 3
Graph data structures and algorithms	week 4-5
Search tree data structures and algorithms	week 7-8
String algorithms, Approximation	week 9
Randomised algorithms, Course review	week 10

Resources for Students

The recommended textbooks associated with this course are

- Robert Sedgewick, *Algorithms in C, Parts 1–4* 3rd edition, Addison Wesley, 1998.
- Robert Sedgewick, *Algorithms in C, Part 5* 3rd edition, Addison Wesley, 2002.

The following introduction to the C programming language is recommended as a supplementary textbook:

- Alistair Moffat, *Programming, Problem Solving, and Abstraction with C* 5th edition, Pearson, 2003.

Course Evaluation and Development

This course is being continuously improved and we will conduct a survey through UNSW's myExperience process at the end of session to obtain feedback on the quality of the various course components. Your participation in the survey will be greatly appreciated. Students are also encouraged to provide informal

feedback during the session, and to notify the lecturer-in-charge of any problems as soon as they arise. Student feedback from the previous offering indicated that students were very satisfied with the course, but suggested to incorporate a small weekly assessment component. We will do this in this offering.

Resource created 10 months ago (Tuesday 01 September 2020, 03:04:04 PM), last modified 9 months ago (Saturday 03 October 2020, 01:18:03 AM).

Comments

(/COMP9024/20T3/forums/search?forum_choice=resource/50945)

(/COMP9024/20T3/forums/resource/50945)



Wilson Lyu (/users/z5328009) 7 months ago (Thu Dec 03 2020 10:46:05 GMT+1100 (Australian Eastern Daylight Time))

I'm not sure if this is the right place to post this but my grades of 9024 on moodle are all gone. Is this normal? I'm a little bit worried.



Hugh Deacon (/users/z3389639) 7 months ago (Thu Dec 03 2020 14:29:36 GMT+1100 (Australian Eastern Daylight Time))

Go here to check your grades:

https://webcms3.cse.unsw.edu.au/COMP9024/20T3/user...
(https://webcms3.cse.unsw.edu.au/COMP9024/20T3/users/grades)

Moodle is just a place where assessments take place.



Wilson Lyu (/users/z5328009) 7 months ago (Thu Dec 03 2020 14:42:03 GMT+1100 (Australian Eastern Daylight Time))

Thank you, Hugh! This is helpful!



Madeleine Nouri (/users/z5331590) 7 months ago (Sun Nov 29 2020 20:22:42 GMT+1100 (Australian Eastern Daylight Time)), last modified 7 months ago (Mon Nov 30 2020 17:32:10 GMT+1100 (Australian Eastern Daylight Time))

[deleted]



Xiaohang Hu (/users/z5293560) 7 months ago (Mon Nov 30 2020 00:09:47 GMT+1100 (Australian Eastern Daylight Time))

I also miss the mock exam. I thought it was open in the middle of today.



Giuseppe Redondi (/users/z5260651) 7 months ago (Sun Nov 29 2020 20:33:24 GMT+1100 (Australian Eastern Daylight Time))

Hi Madeleine,

I have asked Tatjana if this would be possible.

Thank you!

Madeleine Nouri (/users/z5331590) 7 months ago (Sun Nov 29 2020 20:38:27 GMT+1100 (Australian Eastern Daylight Time))

Thanks

Giuseppe Redondi (/users/z5260651) 7 months ago (Sun Nov 29 2020 20:42:36 GMT+1100 (Australian Eastern Daylight Time)), last modified 7 months ago (Sun Nov 29 2020 20:42:43 GMT+1100 (Australian Eastern Daylight Time))

UPDATE: Unfortunately, we cannot.

Deniz Dilsiz (/users/z3463717) 7 months ago (Sun Nov 29 2020 21:20:23 GMT+1100 (Australian Eastern Daylight Time))

Hi Giuseppe,

understood that opening the exam on moodle is not possible at this stage,

Is it alternatively possible for those practice questions to be shared generally on the course page?..

Best,

Deniz

Giuseppe Redondi (/users/z5260651) 7 months ago (Sun Nov 29 2020 22:08:32 GMT+1100 (Australian Eastern Daylight Time))

Hello Deniz,

Unfortunately not, due to the explicit open/close deadlines posted in the announcements & on moodle.

Taylor Oishi (/users/z5060191) 7 months ago (Sun Nov 29 2020 12:16:37 GMT+1100 (Australian Eastern Daylight Time)), last modified 7 months ago (Sun Nov 29 2020 12:17:31 GMT+1100 (Australian Eastern Daylight Time))

I was only given 3 minutes to complete the moodle mock exam.

Can I please get it reset?



Started on	Sunday, 29 November 2020, 12:12 PM
State	Finished
Completed on	Sunday, 29 November 2020, 12:15 PM
Time taken	2 mins 58 secs
Grade	**0.67** out of 22.00 (**3%**)

Thanks.

Giuseppe Redondi (/users/z5260651) 7 months ago (Sun Nov 29 2020 20:02:04 GMT+1100 (Australian Eastern Daylight Time))

Hey Taylor,

It was only open until 12:15PM today as stated in the announcement.



Madeleine Nouri (/users/z5331590) 7 months ago (Sun Nov 29 2020 20:24:03 GMT+1100 (Australian Eastern Daylight Time))

Hi Guiseppe

Can we please get some more time for the mock exam?



Giuseppe Redondi (/users/z5260651) 7 months ago (Sun Nov 29 2020 20:33:00 GMT+1100 (Australian Eastern Daylight Time))

Hi Madeleine,

I have asked Tatjana if this would be possible.

Thank you!



Hugh Deacon (/users/z3389639) 7 months ago (Sun Nov 29 2020 11:59:38 GMT+1100 (Australian Eastern Daylight Time))

Formatting of pseudocode in Moodle exam environment

Hi, did anyone else have any issues with formatting their pseudocode in Moodle? I was hoping to use the tab indents but it would only indent the entire code block, instead of the selected text. Am I missing something? I assume this wouldn't affect our mark, but it would just help readability for everyone!

Good luck tomorrow all!



Giuseppe Redondi (/users/z5260651) 7 months ago (Sun Nov 29 2020 20:04:12 GMT+1100 (Australian Eastern Daylight Time))

Hey Hugh,

This is interesting! You could use an outside text editor/IDE and then copy and paste into the answer boxes.

Best of luck!



Hugh Deacon (/users/z3389639) 7 months ago (Mon Nov 30 2020 09:59:35 GMT+1100 (Australian Eastern Daylight Time))

Ahh good idea. Will try this if required. Thanks Giuseppe!



Taylor Oishi (/users/z5060191) 7 months ago (Sat Nov 28 2020 11:55:10 GMT+1100 (Australian Eastern Daylight Time))

Error 403 - Access forbidden for past quizzes.

Hi I was wondering if you could open up the question links used in the weekly quizzes, so we can review them thanks.

Also I missed quiz 2 by accident, any chance I can get access to the questions and answers.

thanks



Giuseppe Redondi (/users/z5260651) 7 months ago (Sat Nov 28 2020 22:59:09 GMT+1100 (Australian Eastern Daylight Time))

It should be fixed now. Please tell me if it's not fixed!
Thanks!



Taylor Oishi (/users/z5060191) 7 months ago (Sun Nov 29 2020 12:09:37 GMT+1100 (Australian Eastern Daylight Time))

Hi sorry no, not yet.

This was exercise 2b) of quiz 4.

Also any word on letting me access quiz 2?

Thanks.

Access Forbidden

This is an "Error Code 403" message.

You were looking for the file
/~cs9024/20T2/probs/ex4/index.php
which you do not have permission to access.

Please check the URL of the document you are after and make sure it has been entered correctly.

If the error persists, please contact cs9024@cse.unsw.edu.au with a copy of this error message.

Enjoy the CSE website.

Error Information

Requested URL:	**/~cs9024/20T2/probs/ex4/index.php**
Error Status:	**403**
Error notes:	**access to /~cs9024/20T2/probs/ex4/index.php failed because search permissions are missing on a component of the path**
Request Protocol:	**HTTP/1.1**
Server Name:	**www.cse.unsw.edu.au**
Server Port:	**443**



Giuseppe Redondi (/users/z5260651) 7 months ago (Sun Nov 29 2020 20:19:31 GMT+1100 (Australian Eastern Daylight Time)), last modified 7 months ago (Sun Nov 29 2020 20:22:52 GMT+1100 (Australian Eastern Daylight Time))

Hey,

I cannot find what you are talking about - is this week 4 quiz? If so, that did not have a 2b.

This is the best way I could think of to give you access to the quiz:

https://docs.google.com/document/d/11AukhGNJiOTgYM... (https://docs.google.com/document/d/11AukhGNJiOTgYMU1VAW684mBKIYYeKI4sjio9OSb-M8/edit?usp=sharing)

Best of luck!



Taylor Oishi (/users/z5060191) 7 months ago (Sun Nov 29 2020 20:36:38 GMT+1100 (Australian Eastern Daylight Time))

Thanks mate,

Also did you manage to provide access to the examples required for the quizzes?

thanks.

Giuseppe Redondi (/users/z5260651) 7 months ago (Sun Nov 29 2020 22:09:39 GMT+1100 (Australian Eastern Daylight Time))

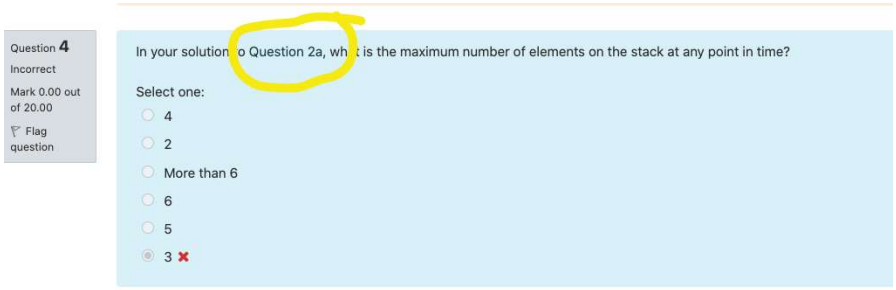
Hi Taylor,

Could you please provide an example of a link that is broken? I still do not know what you mean by question 2b of quiz 4 (there is no 2b of quiz 4).

Thanks!

Taylor Oishi (/users/z5060191) 7 months ago (Sun Nov 29 2020 23:02:33 GMT+1100 (Australian Eastern Daylight Time)), last modified 7 months ago (Mon Nov 30 2020 13:58:55 GMT+1100 (Australian Eastern Daylight Time))

Hi sorry I was referring to this link,



which is this link here
https://www.cse.unsw.edu.au/~cs9024/20T2/probs/prob4/index.php

Giuseppe Redondi (/users/z5260651) 7 months ago (Sat Nov 28 2020 21:12:23 GMT+1100 (Australian Eastern Daylight Time))

Hey Taylor,

I'll ask Tatjana for you.

Thanks!

Yiming Song (/users/z5287379) 7 months ago (Sat Nov 28 2020 00:40:59 GMT+1100 (Australian Eastern Daylight Time))

What is 'slide 30 of the last lecture'?

In the notice that Tatjana just posted.

Giuseppe Redondi (/users/z5260651) 7 months ago (Sat Nov 28 2020 21:14:01 GMT+1100 (Australian Eastern Daylight Time))

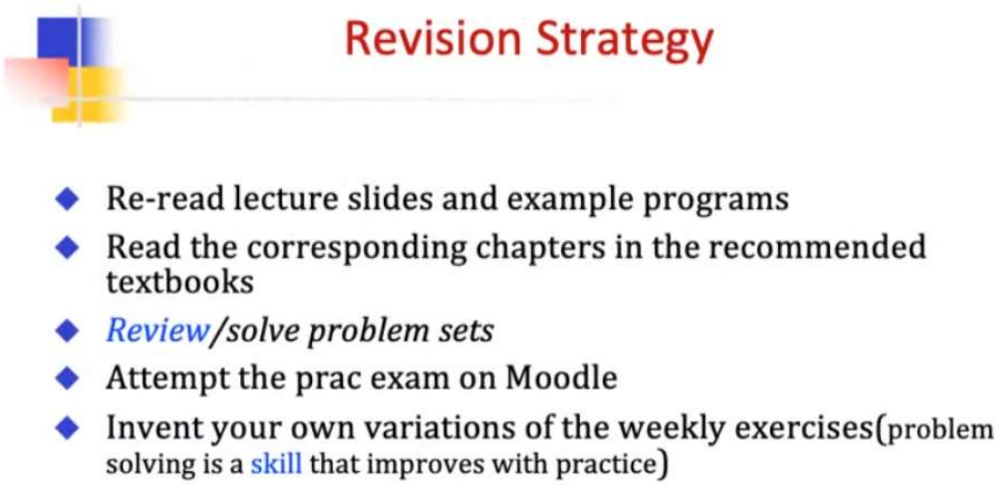
Hey,

Thanks Yiming & thanks Victoria for an amazing answer!
Best of luck to you both :).



Victoria Ho (/users/z5329564) 7 months ago (Sat Nov 28 2020 19:56:48 GMT+1100 (Australian Eastern Daylight Time))

I think this is what was meant. Just standard exam prep.





Yiming Song (/users/z5287379) 7 months ago (Sun Nov 29 2020 00:30:34 GMT+1100 (Australian Eastern Daylight Time))

thank you!



Liam Hudson (/users/z2172791) 7 months ago (Wed Nov 25 2020 22:15:34 GMT+1100 (Australian Eastern Daylight Time))

Not sure where to post this. I was away for the past couple days and just saw an announcement posted on Tuesday that the weekly Friday help session was moved to Tuesday/Wednesday? I was planning on asking any questions I had in relation to the final in this session as I assume were many others (particularly as I haven't had time to do the sample exam yet).

Will there be the usual help session/consultation this Friday? It's not really reasonable to keep changing the schedule throughout the course as students such as myself with work commitments need proper notice. I arranged at the beginning of semester with my work to get Fridays off because I was told that was when the help sessions were...



Giuseppe Redondi (/users/z5260651) 7 months ago (Thu Nov 26 2020 23:41:49 GMT+1100 (Australian Eastern Daylight Time))

Hey Liam,

Unfortunately there are no more help sessions planned for this course. Maybe you could post some questions on the forums?



Haoran Pang (/users/z5007419) 7 months ago (Fri Nov 27 2020 22:41:24 GMT+1100 (Australian Eastern Daylight Time))

Hi Giuseppe,

I'm not sure if Tatjana have mentioned this or not, just want to confirm the exam is open book right



Giuseppe Redondi (/users/z5260651) 7 months ago (Sat Nov 28 2020 22:59:39 GMT+1100 (Australian Eastern Daylight Time))

UPDATE: It is open book.

Best of luck! :)



Giuseppe Redondi (/users/z5260651) 7 months ago (Sat Nov 28 2020 21:11:38 GMT+1100 (Australian Eastern Daylight Time))

Hey Haoran,

I will double check with Tatjana for you.



Hao Tang (/users/z5190645) 7 months ago (Fri Nov 06 2020 13:44:33 GMT+1100 (Australian Eastern Daylight Time))

Hi.

Can you please give more information about the final exams? For example, exam time and any samples or example, of final exams. Plus, how should we prepare finals? Thanks



Giuseppe Redondi (/users/z5260651) 7 months ago (Fri Nov 06 2020 21:44:41 GMT+1100 (Australian Eastern Daylight Time))

Hi Hao,

As for sample exams - I'll ask Tatjana about that.
As for timing of the exam - please check the 'view exam timetable' link on the sidebar of myunsw.
Preparing for your finals should include re reading the weekly assessments/quizzes, reimplementing the algorithms you've learned about & in general reviewing lecture content.
Hope this helps :).



James Nugent (/users/z5332965) 8 months ago (Sun Oct 18 2020 13:46:33 GMT+1100 (Australian Eastern Daylight Time))

Hi. Can you please provide some guidance on the nature of questions in the midterm exam? Will the questions test our understanding of the theory we've learnt, will they require us to write pseudo-code, will they build on some of the programs we've already developed (like the quizzes), or will they require us to write a new program? I'd like to know so I can focus my study.



Sahil Punchhi (/users/z5204256) 8 months ago (Mon Oct 19 2020 15:59:24 GMT+1100 (Australian Eastern Daylight Time))

Hi James, I will request Tatjana to share some sample questions for practice.



James Nugent (/users/z5332965) 8 months ago (Tue Oct 20 2020 15:33:57 GMT+1100 (Australian Eastern Daylight Time))

Thanks Sahil.



James Nugent (/users/z5332965) 8 months ago (Fri Oct 23 2020 16:46:12 GMT+1100 (Australian Eastern Daylight Time))

Any update on this? I just want to know if the questions will be based on the problem sets/weekly assessments (like the quizzes).



Sahil Punchhi (/users/z5204256) 8 months ago (Fri Oct 23 2020 17:49:27 GMT+1100 (Australian Eastern Daylight Time))

I haven't got any update till now unfortunately.



Liam Hudson (/users/z2172791) 9 months ago (Thu Oct 01 2020 09:25:33 GMT+1000 (Australian Eastern Standard Time))

The outline says

Assignment 2 (Monday week 7)	12

Is it a coding assignment or a midterm exam? If it's an assignment when will the spec be released?



Sahil Punchhi (/users/z5204256) 8 months ago (Mon Oct 19 2020 15:58:00 GMT+1100 (Australian Eastern Daylight Time)), last modified 8 months ago (Mon Oct 19 2020 15:58:38 GMT+1100 (Australian Eastern Daylight Time))

This would be midterm exam. The final assignment ("Large Assignment") would be released later on.



Madeleine Nouri (/users/z5331590) 8 months ago (Tue Oct 20 2020 18:24:05 GMT+1100 (Australian Eastern Daylight Time))

Hi Sahil, outline says large assignment will be released from week 4 to week 10 but we have passed this timeframe now. doesn't it need 6 weeks to complete?



Sahil Punchhi (/users/z5204256) 8 months ago (Fri Oct 23 2020 17:53:36 GMT+1100 (Australian Eastern Daylight Time))

Hi Madeleine,

The assignment will definitely not require 6 weeks of your time. It will be designed keeping the timeframe in mind.

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