University of Lancashire

CO3008/CO3808 Honours Degree Project

Proposal

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Where opportunity creates success

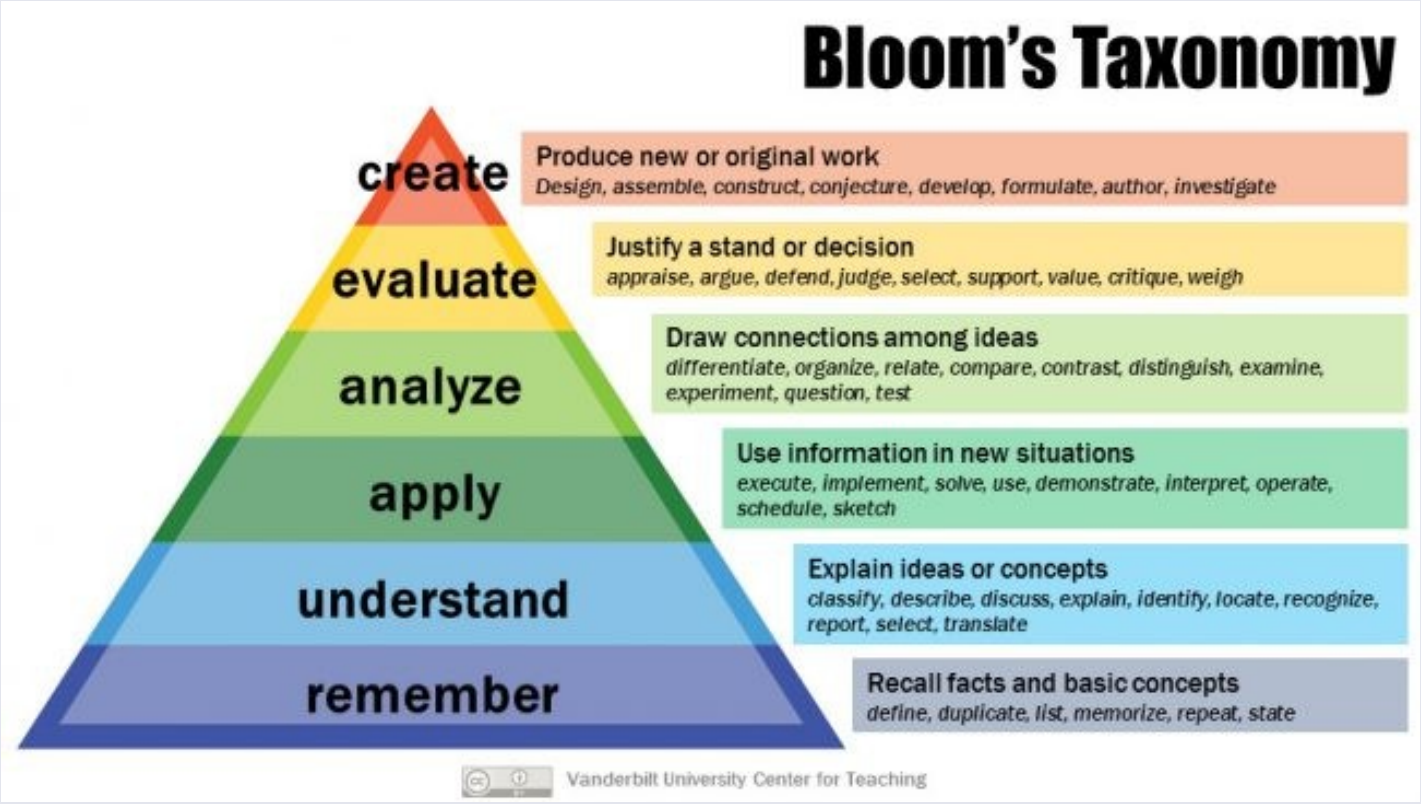
This Session

- Outline what makes a good proposal
- Outline Proposal Components
  - Problem Statement
  - Ethical Analysis
  - Risk Assessment
  - Health and Safety
  - Time and Resource Plan
- (time permitting) Explore Time Planning Techniques

- By the end of this session you should be know what is expected from your proposal submission

Finishing Off Last Week

Bloom's Taxonomy



Bloom’s Taxonomy

- Helps explain the process of learning
- Before you can ***understand*** a concept, you must ***remember*** it.
- To ***apply*** a concept you must first ***understand*** it.
- In order to ***evaluate*** a process, you must have ***analyzed*** it.
- To ***create*** an accurate conclusion, you must have completed a thorough ***evaluation***.

Past Projects

Past Projects

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ULCNWT100	Remote lab deployment
VSSWEN100	Movie application
ULCYSE100	Honeypot
ULCYSE100	Personal security manager
ULCNWT100	Network testing
ULCNWT100	Virtual desktop infrastructure
ULCOFS100	Forensic Windows upgrade
ULCOSC300	AI diamond appraiser tool
VSCOGD100	VR archery simulator
ULCNWT100	OSI animation
VSCOGD100	VR magical simulation
VSCOMP100	Chat application
VSCOGD102	Multi-genre video game showcase
VSCOGD100	Adaptive generation using generative grammars
ULCNWT100	Secure health fitness app

VSCOGD100	3D platformer game
HBSWEN100	Machine learning financial markets
HBSWEN100	Board game AI
HBSWEN100	File sorting system
HBSWEN100	Radar interface testing tool
VSCOGD100	Facial recognition for safety
VSCOGD100	Procedural content generation
ULCYSE100	Educational cyber security app
VSSWEN100	Fundamental analysis tool
ULCNWT100	Operating system security system
VSCOMP100	Realtime monitoring solution
VSCOMP100	Crypto tracker
VSSWEN100	Facial recognition system
VSCOGD102	Vehicle interaction

Past Projects

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HBSWEN101	Automatic Test File Updater
HBSWEN101	System integration of microserve REST APIs
ULCNWT100	DNS based file system
ULCYSE100	Malware analysis
ULCNWT100	Sport event management system
HBSWEN101	Social media scraper
VSCOGD102	Dungeon crawler RPG
VSCOGD102	Realistic water with object interactions
ULCYSE300	Natural language processing to detect spam emails
VSCOMP100	Car dealershp DBMS
ULCYSE100	Analysis of user biometrics using keylogging
VSCOMP100	Raspberry Pi doorbell using facial recognition
VSCOGD302	Emergency services management game
VSCOMP100	Football fundraiser application

VSSWEN100	Student organisation app
VSCOGD100	Graphical physics and collision engine
VSCOGD100	Card based game using AI
VSCOMP100	Food shopping/cooking app
VSSWEN100	AI prediction of greyhound racing results
VSCOGD100	Procedural generation of terrain
VSSWEN100	Web application for League of Legends
ULCOFS100	Discord investigation on Windows
VSSWEN100	Full stack marketplace application
VSSWEN100	Motion capture and synthesis with CV and robotics
VSSWEN100	Learning management system
VSCOMP100	Fitness and progression tracking app
VSCOMP300	Doctor patient communication system
VSCOGD100	3D spooky dungeon game
ULCYSE100	Password strength application

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Assignment Brief now released

- Available in the Assessments folder on Blackboard
- Template for the Proposal has also been uploaded
  - It's pretty basic!
- I recommend you read the brief in full, not just the next deliverable
- I recommend you re read in full before working on each deliverable
  - So you avoid repeating yourself in the subsequent sections
    - E.g. Requirements come in deliverable 3 (Design and Implementation)
- A template for the report will be uploaded in due course
  - Remember the report is submitted 'cumulatively'

Supervisor Update

- All students who completed the survey by the Wednesday deadline have been allocated a supervisor. You will be notified of your supervisor by email today or tomorrow.
  - you should arrange an appointment with your supervisor as soon as you are able
  - Preferably this week, supervisors have been told to contact you too
- 141 people responded to my survey (thanks!)
- It is not possible to allocate a specialist to every student
  - Remember your supervisor will NOT be giving you technical help
    - You are free to approach ANY member of staff to ask technical questions
      - They may not help either!
  - It is the supervisor's role to *oversee* your work
    - Check that you are actually doing some – demonstrating engagement
    - Check that you are not doing anything silly – working ethically and safely

Report Structure

- Proposal (A Template is now available on Blackboard)

- Report (A Template will be provided)
  - Introduction
  - State of the Art
  - Methodology
  - Design
  - Implementation
  - Evaluation
  - Conclusions

The Proposal

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- High level outline of what it is you want to do

- You should know a working title for your project E.g.
  - Procedural Dungeon Generation
  - AI Diamond Appraiser
  - Car Dealership Database Management System
  - Crypto Miner Malware Analysis

You can always tweak the title for your report in later deliverables

- At the point of this submission you should be able to outline the problem space your project is situated in
  - Helps reassure you your project is worthwhile

Professional Body Requirements

- Students will undertake a major computing project, in their final year and as an individual activity, giving them the opportunity to demonstrate:
  - their ability to apply practical and analytical skills present in the programme as a whole
  - innovation and/or creativity
  - synthesis of information, ideas, and practices to provide a quality solution together with an evaluation of that solution
  - that their project meets a real need in a wider context
  - the ability to self-manage a significant piece of work
  - critical self-evaluation of the process

Report Must Include

- Elucidation of the problem and the objectives of the project
- An in-depth investigation of the context and literature, and where appropriate, other similar products (this section is likely to be emphasised less for an IEng project)
- Where appropriate, a clear description of the stages of the life cycle undertaken
- Where appropriate, a description of how verification and validation were applied at these stages
- Where appropriate, a description of the use of tools to support the development process
- A critical appraisal of the project, indicating the rationale for any design/implementation decisions, lessons learnt during the course of the project, and evaluation (with hindsight) of the project outcome and the process of its production (including a review of the plan and any deviations from it)
- A description of any research hypothesis
- references

Professional Body Requirements

- Projects must include the students undertaking practical work of some sort using computing/IT technology.
  - This is most frequently achieved by the creation of an artefact as the focus for covering all or part of an implementation lifecycle.
  - Reports based solely on literature review activity and/or user/ market surveys are not acceptable.

- This module and the assignment brief has been constructed and validated to ensure compliance with these professional body requirements

The Proposal

- You may not know exactly WHAT technologies you are going to use to address the problem identified yet
  - At this point you should be exploring alternatives and discussing possibilities with your supervisor

- Given the definition of the problem space you should be able to investigate any potential legal/ethical issues relating to this area
  - This will allow you to perform an ethical analysis of the surrounding context of your chosen problem

Is Ethics Relevant to my Project?

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- **ALL** projects will require an ethical analysis!
- As a computing professional we have a number of obligations that may fall under the remit of ethical conduct if not considered carefully
  - Do no harm
  - Acquire and maintain knowledge and skills
  - Maintain and deliver true and accurate data
  - Respect personal privacy
  - Put our users' needs first – deliver systems that work for them
  - Use the Earth's resources economically
  - Build and deploy systems which use electrical power efficiently.

https://www.bcs.org/articles-opinion-and-research/ethics-doing-the-right-thing-in-it/

Risk Assessment

- All projects carry a risk of failure
  - You will consider health and safety risks separately

- What factors could pose a risk to the success of the Project
  - Beyond your control?
  - Within your control?

- How do you mitigate against these?

- This section may benefit from some kind of table
  - Risk, Severity, Likelihood, Action/Mitigation

Health and Safety

- While neglecting health and safety issues would be considered unethical. These should be considered separately.
  - There may be systems that are safe to use, but are unethical

- A Health and Safety assessment should also be carried out for conducting work within your defined problem space
  - Identify potential health and safety risks
  - Identify mitigating measures
  - Consider both the artefact AND the development process

- You are important, as well as potential users and the general public
  - Display screen equipment, working hours/location, test environment etc.

Time Planning

- The single most important predictor of success on the project is effective time planning and management

- Even within university there will be lots of other things competing for your time
  - Attending Lectures
  - Working on Assignments
  - CV Building

- There will be certain windows when you will want to work and when you will NOT want to work
  - E.g. you may not want to work over the scheduled breaks

Time Planning

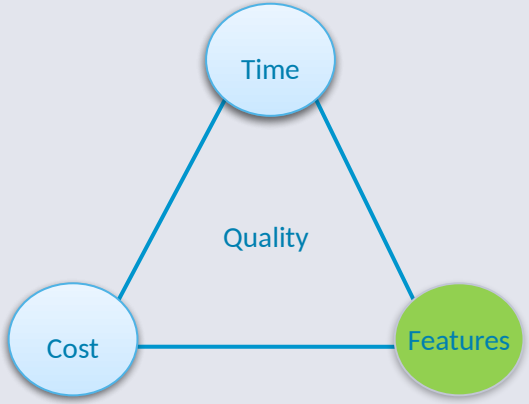
- There will be certain milestones even within this module that you are expected to hit
  - Formative Implementation Deadlines
  - Written Submission Deadlines

- How will you catch up if you fall behind?
  - Have you integrated that into your planning

- How will you *know* you are falling behind?
  - Demonstrate control

Iron Triangle

- Budget (Cost)
- Schedule (Time)
- Scope (Features)
- Quality
- If any of the above elements becomes a variable so too must one or more of the others
- If time becomes a variable, then so too will features and/or cost
  - Assuming quality is a constant



Time and Cost are not variables on your project

Once time has passed on your project, you don't get it back. Treat it with respect.

Time Planning

- It isn’t possible to produce a successful project based solely on a period of intense activity immediately before the final deadline

- Need to work consistently and effectively throughout the duration of the project
  - The is value in keeping momentum

- Can be helpful to record project related activity in a log
  - E.g. a weekly record of work you have engaged in to meet your objectives
  - Can include records of supervision meetings and actions arising

Time Planning

- Be disciplined and protective of your project time
  - You will thank ‘student you’ later in life
- Find a system that works for you and helps keep you on track
- For help and advice
  - Your supervisor is a resource
  - Your academic coach is a resource
- This project will be challenging
  - Mainly because of the self discipline, time and effort required
  - Satisfaction and experiential learning are some of the rewards

The Pomodoro Technique

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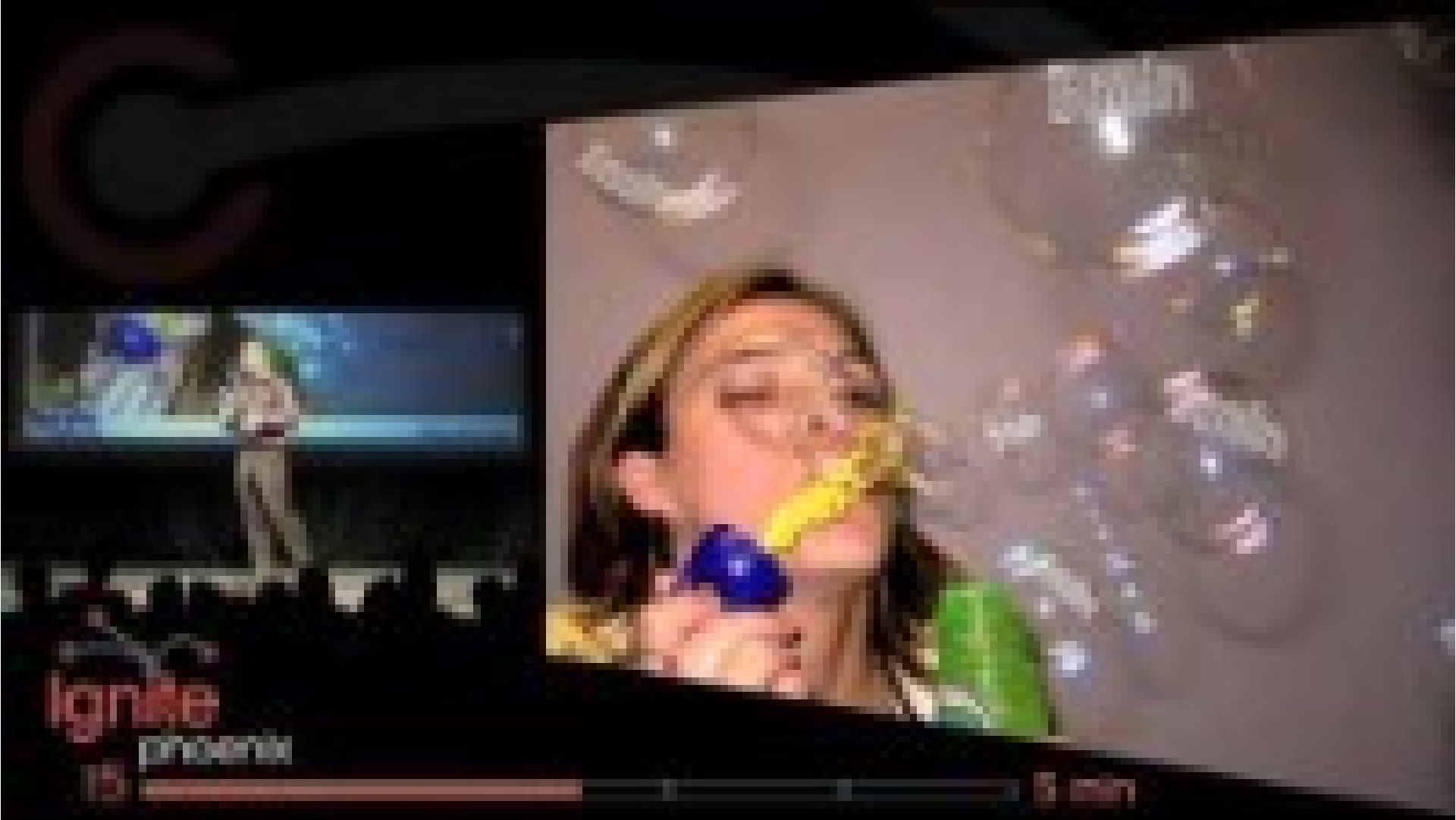
- Time Management Method
- Created by a student to help with studies
- Uses timer to break down work into intervals
- Traditionally 25 mins in length
  - Separated by short breaks
- Widely popularised with many online timers and apps
- Closely related to timeboxing
  - And incremental development

Find out more: https://www.pomodorotechinique.com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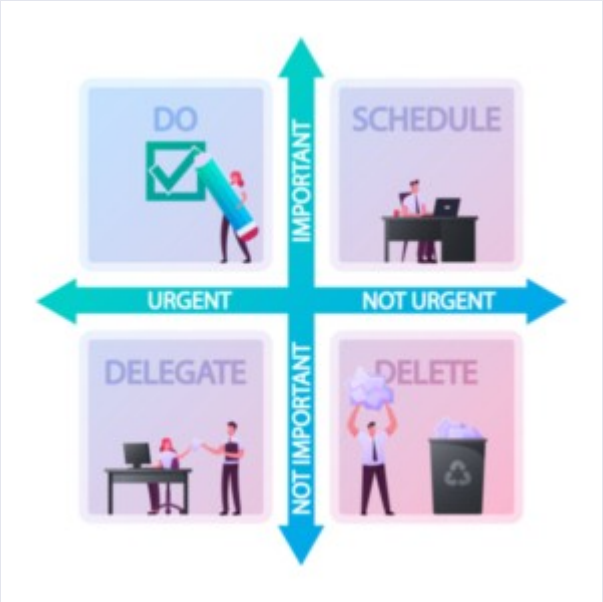
proverbs

Time Planning Techniques

- Kanban Charts + Estimation
  - E.g. Trello
- Goal Setting
- ABCD Technique
  - Don’t ignore the most important or valuable tasks
  - Prioritise (MoSCoW at a finer level)
  - Consider the Pareto Principle (80/20 rule)
- Eisenhower Matrix
- GTD Technique (Getting Things Done)



Read More: https://arc.dev/developer-blog/time-management-skills/

Resources Planning

- Time may only be one resource for your project
- You may need special equipment at certain times
  - E.g. from university stores
- Your supervisor is a resource
- University labs are resources
- The university library is a resource
- Are you going to need to acquire any other resources to be successful in your project?
  - How do you plan to do it?

Proposal Structure (Due Friday 24th October)

- Problem Statement - A brief outline of the problem your project aims to address.
- Ethical Analysis – a discussion of the potential ethical issues surrounding the problem domain and any considerations you will need to make to ensure your project is completed in line with the ethical standards expected of a computing professional, including potential issues relating to equality, diversity and inclusion.
- Risk Assessment – An investigation into the potential risks of the project itself, i.e. risks that could lead to project failure, contingencies and how risks can be mitigated
- Health & Safety Assessment – An investigation into the potential health and safety risks to yourself, the public and users of your artefact.
- Potential for Commercial Development – A short outline of any envisioned potential for commercialisation/commercial development of your solution.
- Time & Resources Plan – How you present your plan for managing your time and project resources is up to you. Your plan should detail how you intend to spend the time and resources on the project to work towards solving the problem outlined in your problem statement.

Proposal Submission

- Submission is by Turnitin only.
  You need to submit an electronic version of the proposal via the module page on Blackboard.
- If you are locked out of blackboard at the time of the deadline email a copy to your supervisor and submit a copy to blackboard after the deadline at your earliest opportunity
- It must be an electronic submission.
- You must submit a *Word* file.
- T*urnitin* is an automatic plagiarism checker.
- You can only submit 1 file!
- For your time and resources plan (if it is visual) you may need to include an image(s) in your word document.

Summary

- Supervisor Update

- Reviewed Proposal Components
  - Problem Statement
  - Ethical Analysis
  - Risk Assessment
  - Health and Safety
  - Potential for Commercial Development
  - Time and Resource Plan

- Explored Time Planning Techniques (if we got time)

The End

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