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# A SYSTEM DEVELOPMENT METHODOLOGY GUIDANCE TOOL FOR SUPERVISION OF IT PROJECTS

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# DEFINITIONS OF TERMS

- System development methodology – It defines the objectives of each phase of the system development and the results required before the next phase can begin.
- Guidance tool – This is the proposed project that will guide the developer through a system development methodology.
- Supervision – In this case, it is the process of overseeing the progress of an IT project.

# INTRODUCTION: BACKGROUND

- Proper application of a system development methodology is critical for success in the development of an information system project.
- It defines the objectives of each phase of the System Development Life Cycle and the results required before the next phase can begin.
- In this day and age, the number of companies that lack seriousness to consistently apply and follow a process is baffling. More so, within Universities whereby students develop Information systems as projects.
- Supervision of IT projects is as well an important part in the development of a system.

# INTRODUCTION: PROBLEM STATEMENT AND AIM

Causes of low success rate of IT projects: improper application of system development methodologies and lack of effective communication from the student to the supervisor and vice versa, as indicated from the data collected.

The intent of this study was to develop a system that will improve the success rate of IT projects through the proper implementation of system development methodologies and additionally, to improve supervision of these IT projects by reviewing the current methods of supervision. The main beneficiaries are students and supervisors.

# INTRODUCTION: SPECIFIC OBJECTIVES

- To **identify** the challenges experienced in application of system development methodologies in IT projects. ✓
- To **review** current methodologies applied by Faculty members in supervision of IT projects. ✓
- To **analyse** web-based Software as a Service (SaaS) technologies used for project management. ✓
- To **develop** a web-based guidance tool for successful supervision of IT projects through proper implementation of system development methodologies. ✓
- To **test** the developed system using 2<sup>nd</sup> year Business IT projects in Strathmore University.

# LITERATURE REVIEW: SYSTEM DEVELOPMENT METHODOLOGIES

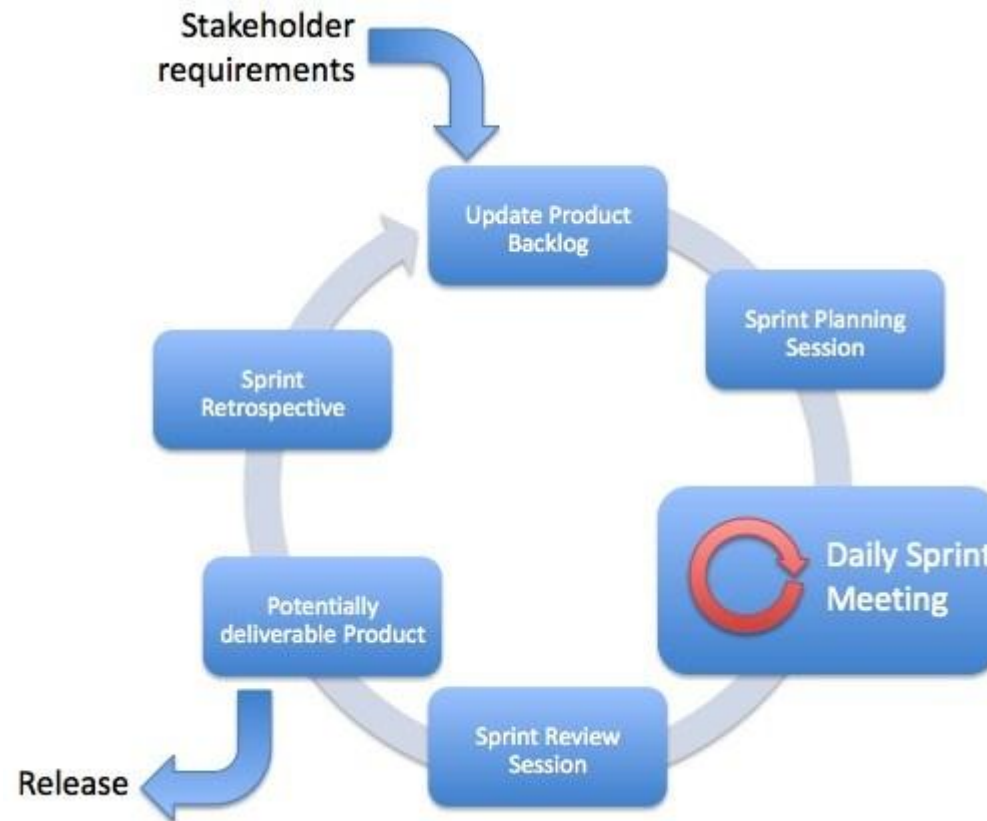
- Saarinen (2018) implied that methods and tools should be sufficient in all stages of the system development lifecycle to ensure success and that certain approaches could be conducive to the correct choice of system development methods.
- Albeit, Fitzgerald (2008) stated that there is much evidence that developers omit some aspects of a methodology, not because of ignorance, but since those aspects seem irrelevant.
- This may seem contradictory but what stands out is that the system development methodology is applied regardless.

# LITERATURE REVIEW: SUPERVISION OF IT PROJECTS

- Each supervisor has a different way of supervising and tracking project progress.
- Communication is mostly done through emails and weekly meetings to supervise project documentation.
- Tracking of the project progress can only be done during physical meetings.

# METHODOLOGY: SYSTEM DEVELOPMENT METHODOLOGY

- Scrum methodology.



This methodology is appropriate because it insists on frequent updating of progress through meetings and constant feedback from customers. Issues can then be identified well in advance and it also becomes easier to make changes to the system.



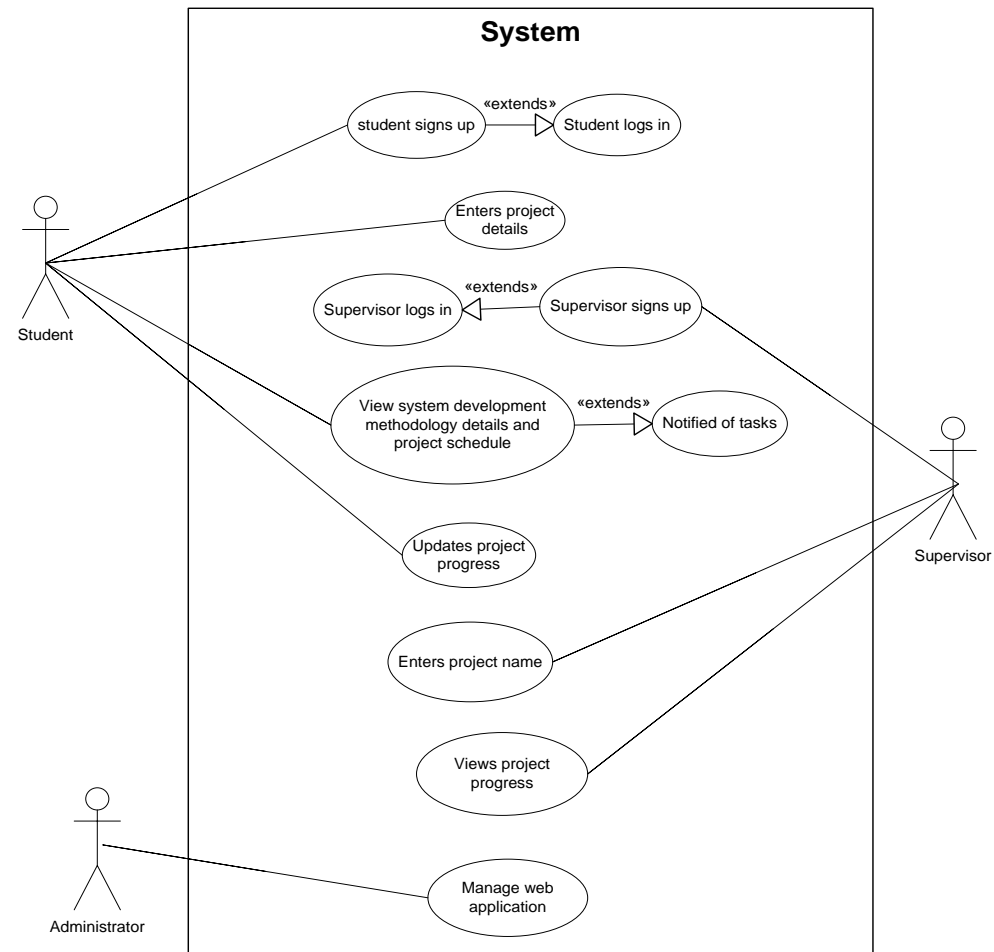
# METHODOLOGY: SYSTEM REQUIREMENTS GATHERING

- A questionnaire intended for 3<sup>rd</sup> and 4<sup>th</sup> years was distributed to find out which system development methodology they prefer to use and how they apply it.
- An additional questionnaire was used for graduates, to identify the relation of applying a system development methodology and the success rate of IT projects.
- Information regarding supervisors and their current methods of supervision and thoughts on project success was also collected through a questionnaire.

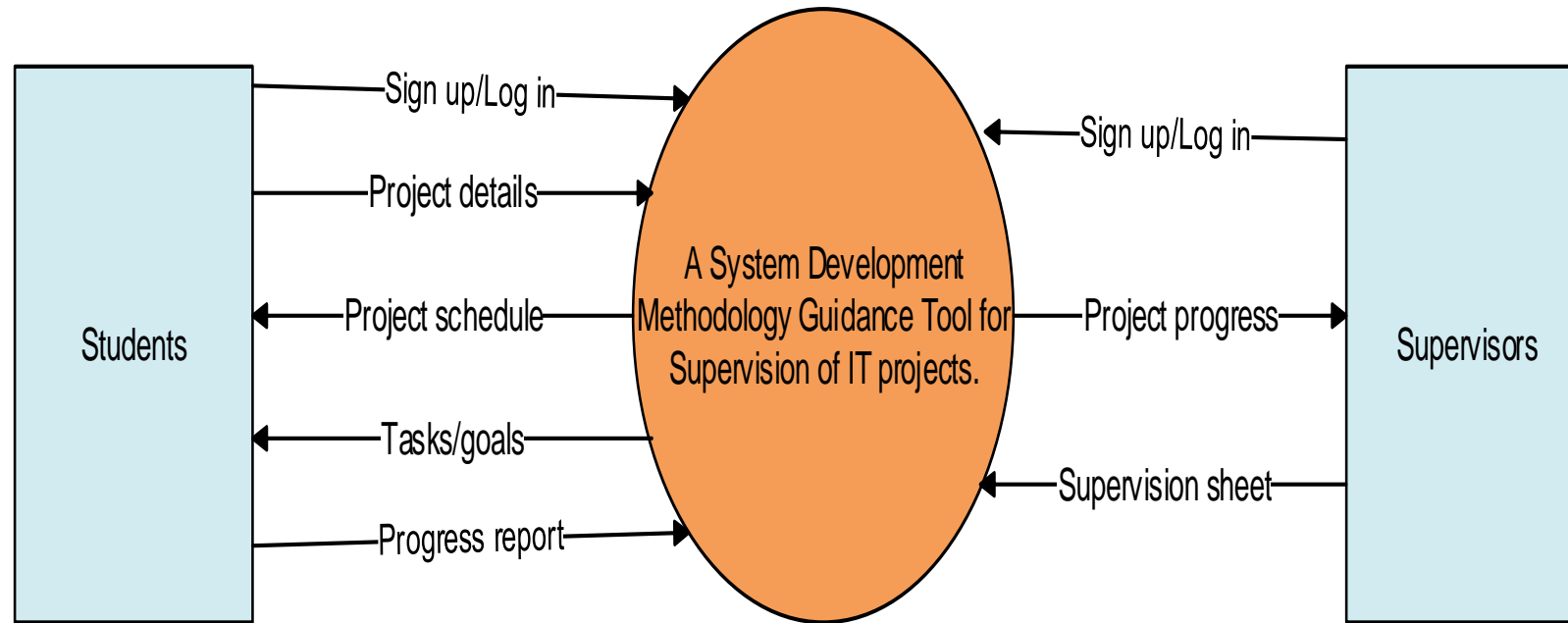
# STRUCTURED SYSTEMS ANALYSIS AND DESIGN TOOLS (SSAD)

- Use case diagram
- Level 0 DFD
- Level I DFD
- Flowchart
- Entity-relationship model
- Database schema
- GUI designs

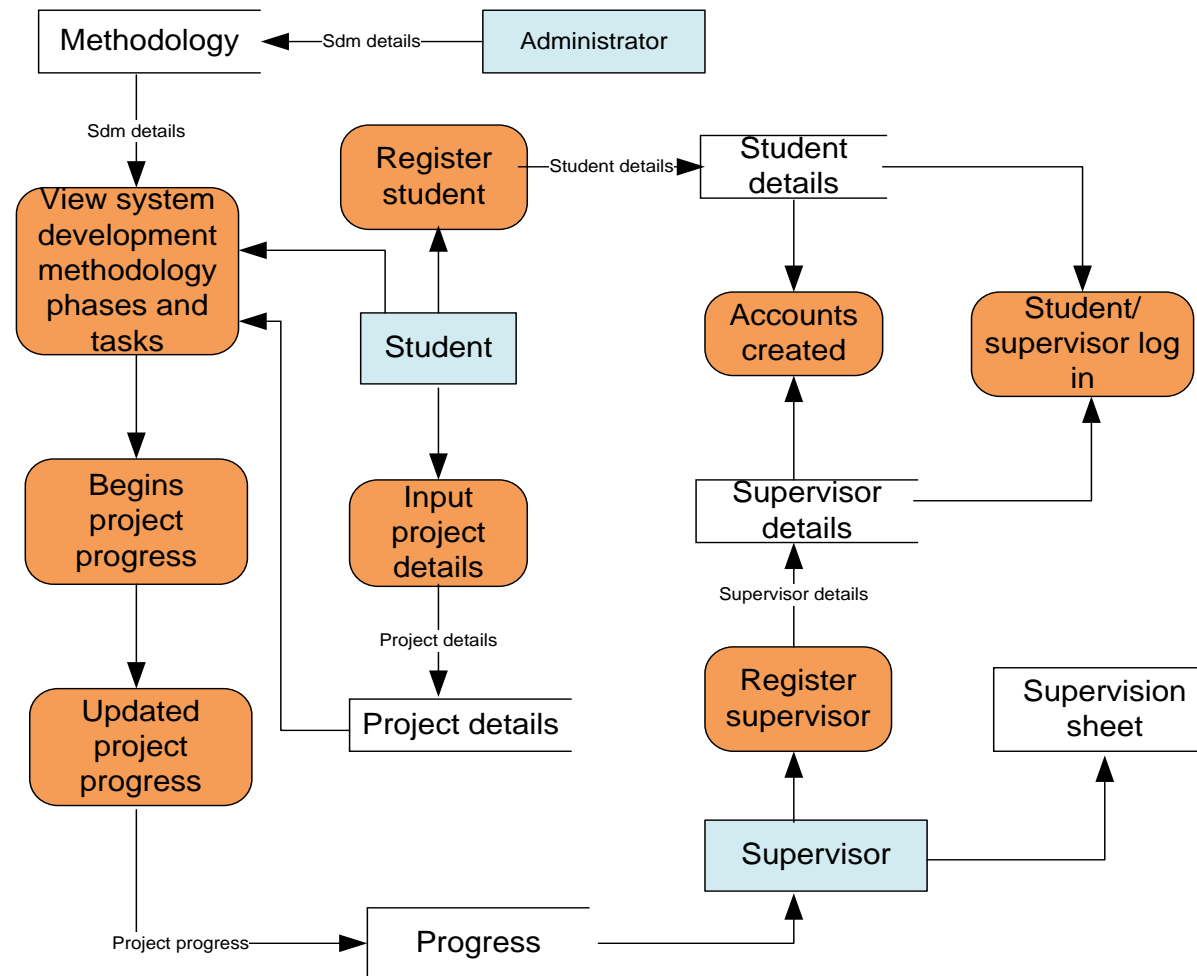
# USE CASE DIAGRAM



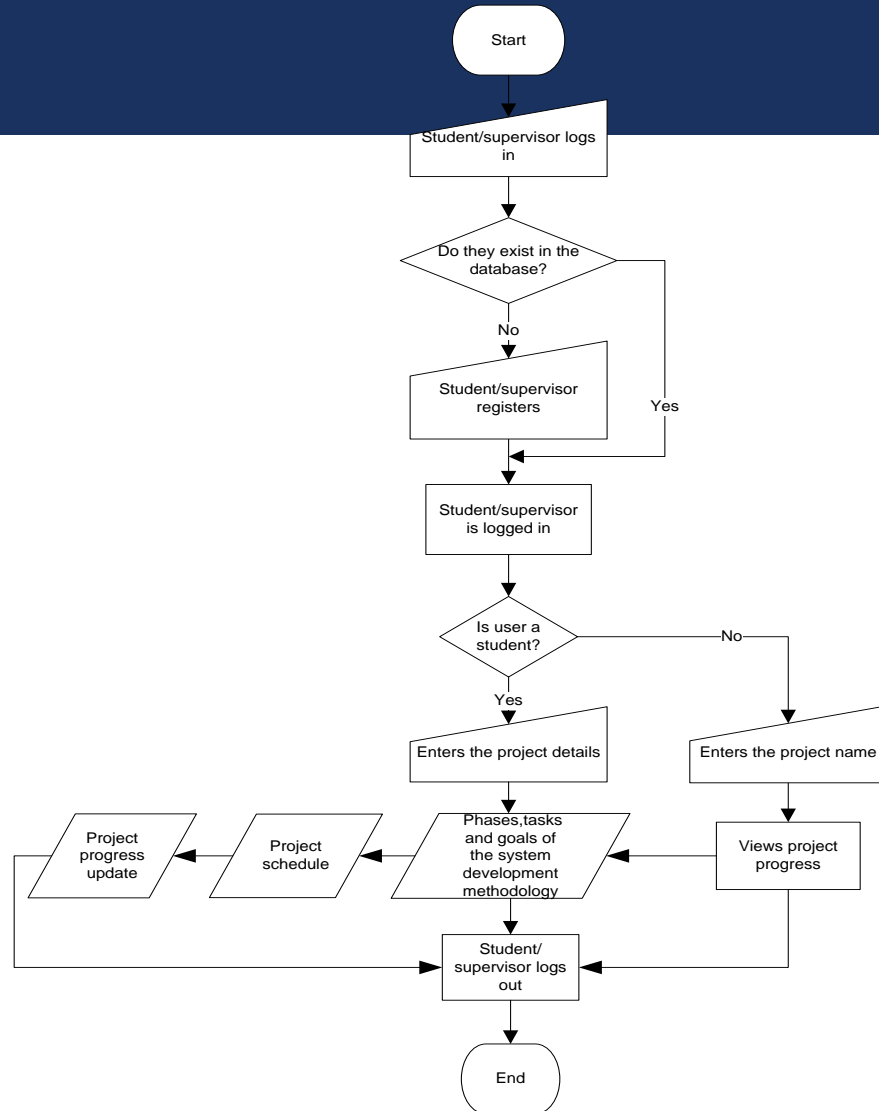
# LEVEL 0 DFD



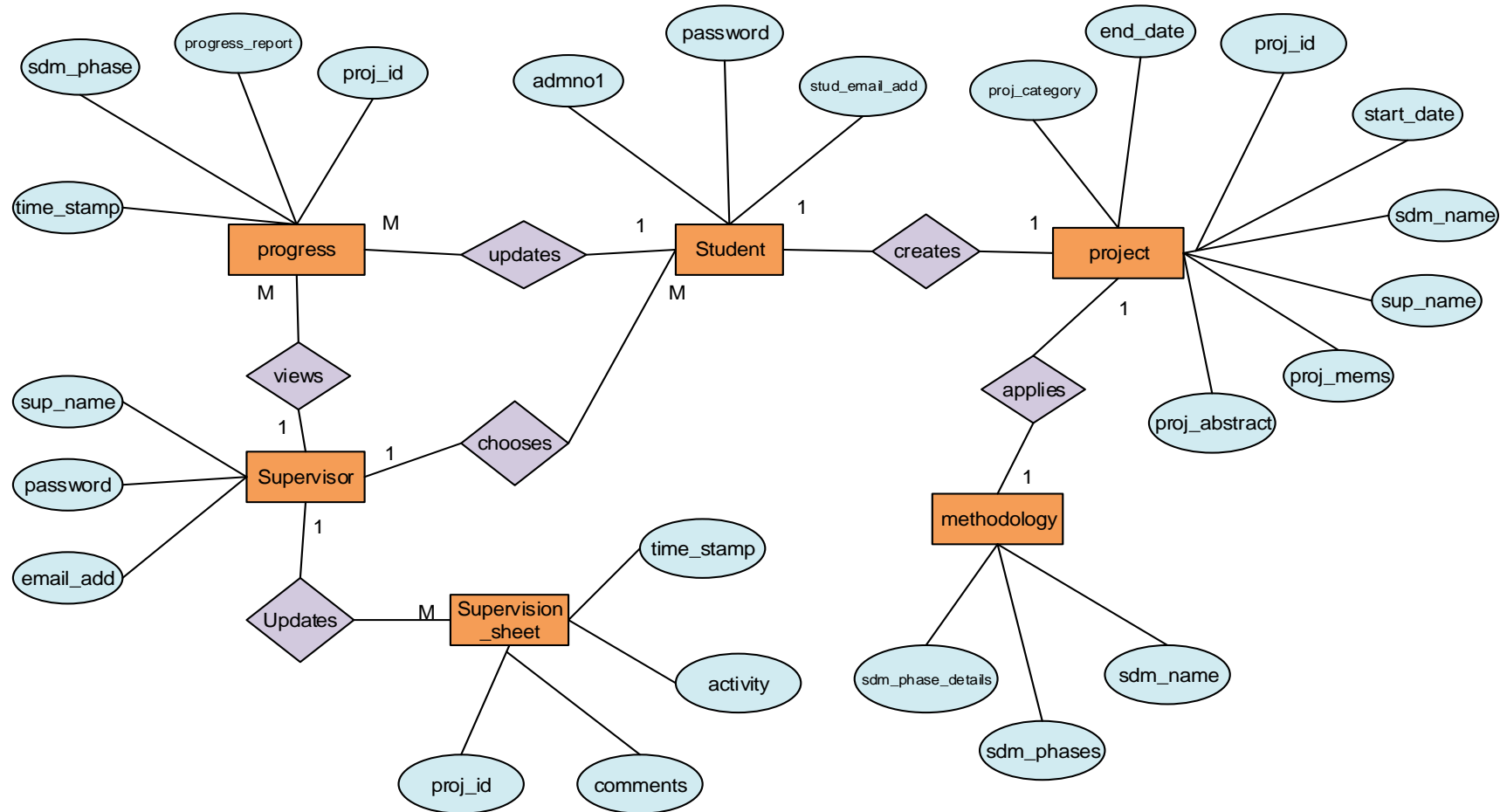
# LEVEL I DFD



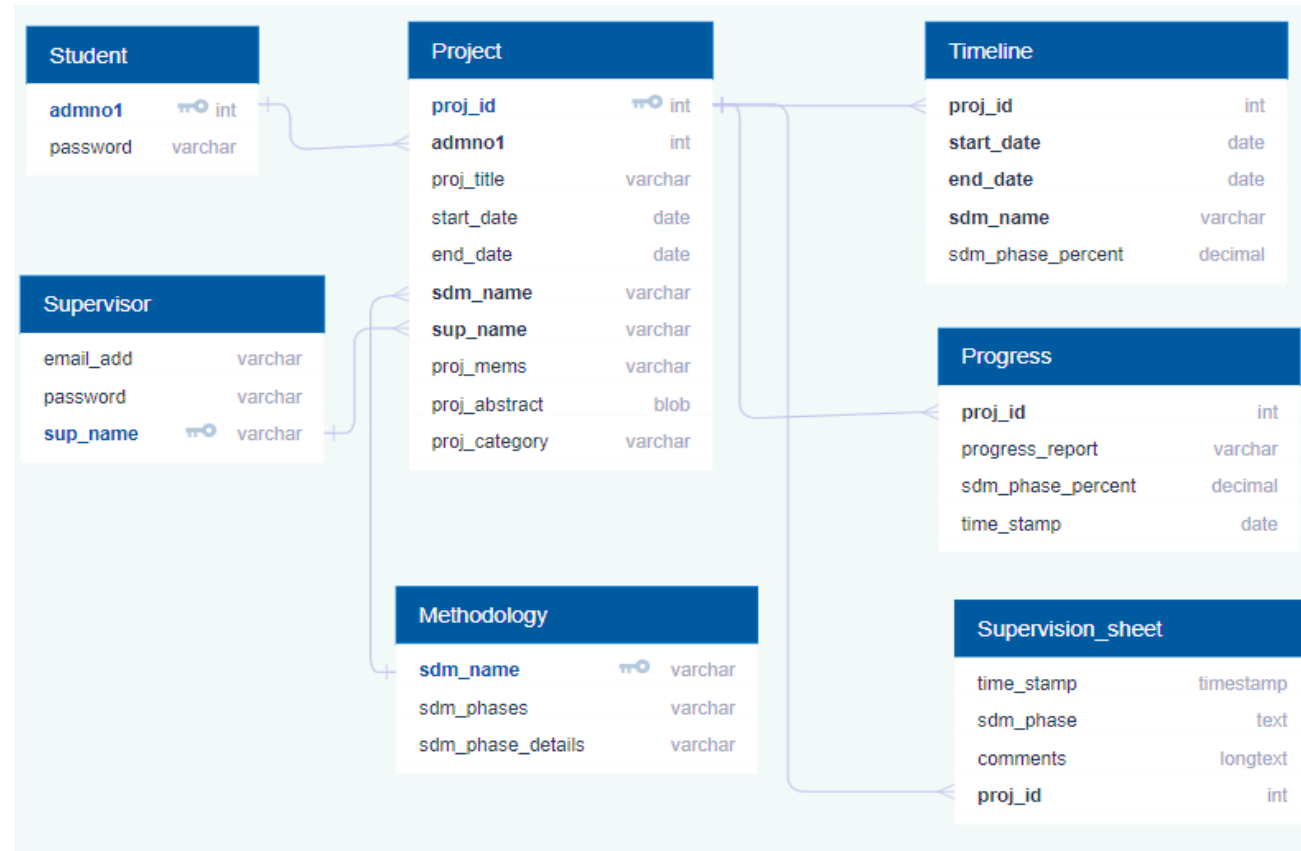
# FLOWCHART



# ERD



# DATABASE SCHEMA

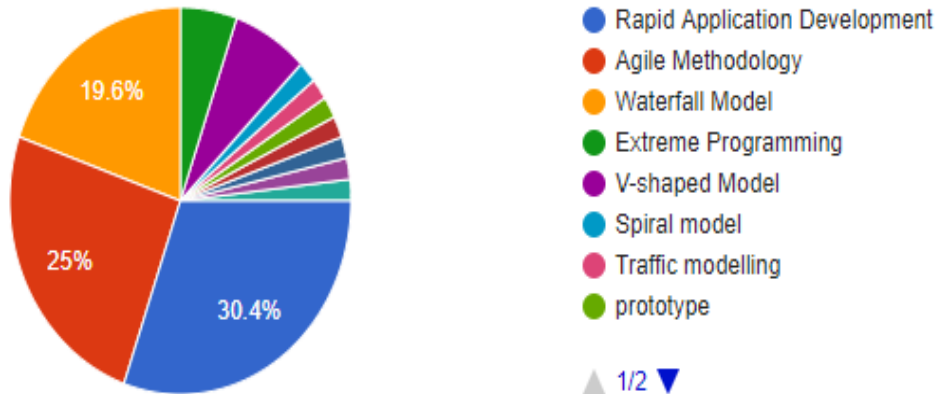




# 3<sup>RD</sup> AND 4<sup>TH</sup> YEAR QUESTIONNAIRE RESULTS

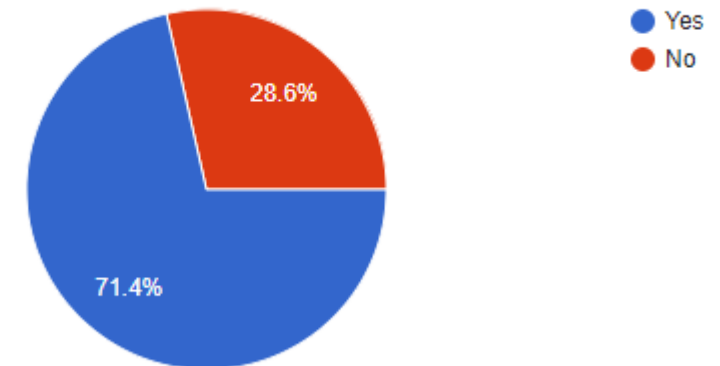
Which system development methodology did you use in your second year project?

56 responses



Do you believe improper application of system development methodologies is a cause of low success rate of IT projects?

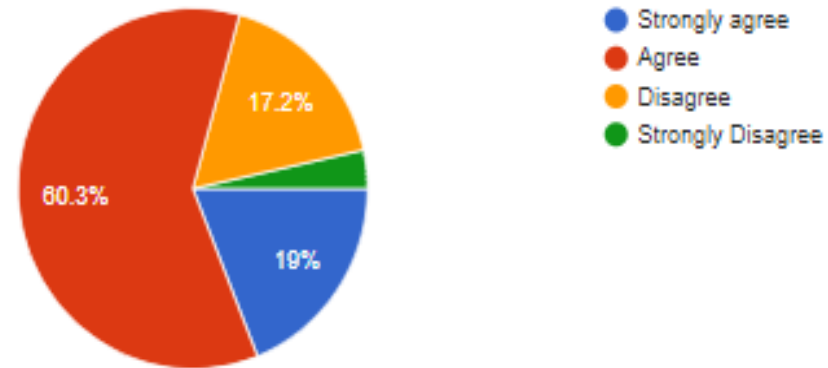
56 responses



## 3<sup>RD</sup> AND 4<sup>TH</sup> YEAR QUESTIONNAIRE RESULTS

To what extent would you say you consistently applied ALL the principles of the chosen system development methodology with discipline

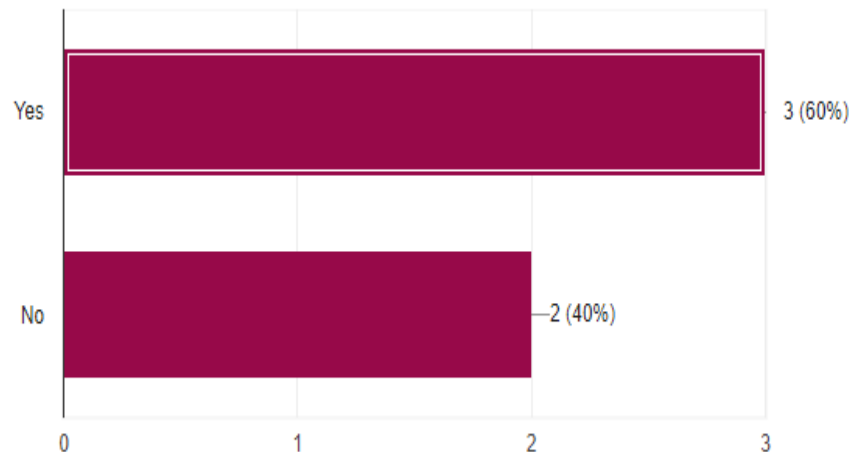
58 responses



# SUPERVISOR QUESTIONNAIRE RESULTS

Do you believe improper application of system development methodologies is a cause of low success rate of IT projects?

5 responses



How can these method(s) be improved through the use of a computer-based Project Management System used by Faculty supervisors for University students' projects?

6 responses

management and monitoring of progress

Allow supervisor to track student progress and possibly grade the students on it

A formal structure be implemented in a system.

Explaining to the students the importance of these deliverables and helping them keep track of milestones

A computer-based Project Management System can support the sending of notifications to both the supervisor and the student on key deliverables that have to be met before the next meeting.

Provide continuous monitoring with a way of measuring performance (progressively)

# FUNCTIONAL REQUIREMENTS

- The system should allow students/supervisors to sign up for an account and they will be authenticated upon log in.
- The system should allow students to enter details of their projects: SDM, project name, start date, end date, project members and supervisor's name.
- The system should inform the student what is expected (goals) at each phase of the SDM.
- The web application will offer guidance on: RAD, waterfall, agile, extreme programming and v-shaped model.
- The system should allow the supervisor to view a graphical representation of their supervisees' project progress.
- The system should allow the supervisor to give feedback to the student via an online supervision sheet.

# REFERENCES

*Introduction to scrum.* (2018). Retrieved from scrum-institute: [https://www.scrum-institute.org/Introduction\\_to\\_Scrum\\_A\\_Real\\_World\\_Example.php](https://www.scrum-institute.org/Introduction_to_Scrum_A_Real_World_Example.php)

Fitzgerald, B. (2008). The use of systems development methodologies in practice. *Information Systems*, 201-212.

Saarinen, T. (2018). Information & Management. *System development methodology and project success*, 407-524.



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