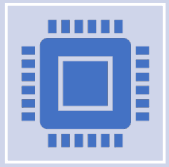
Noraini Ibrahim, SC UTM 2022 ©

Agenda:

- Introduction to SE PSM for SCSJ/SECJ program
- SE PSM Types – System & Research
- SE PSM1 Potential Topics
- SE PSM2 Samples
- Q&A

Noraini Ibrahim, SC UTM 2022 ©

Software Engineering



Software engineering is an **engineering discipline** that is concerned with all aspects of **software production**.

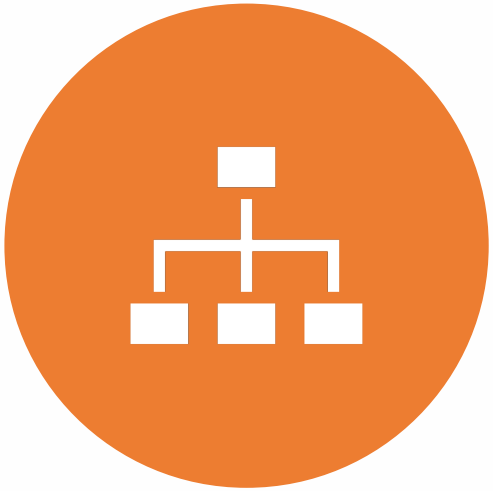
Software engineers should adopt a **systematic** and **organised approach** to their work and use appropriate tools and techniques depending on the problem to be solved, the development constraints and the resources available

Students are expected to be able to apply most of the common software engineering concepts and techniques as well as producing various **software artifacts and deliverables**.

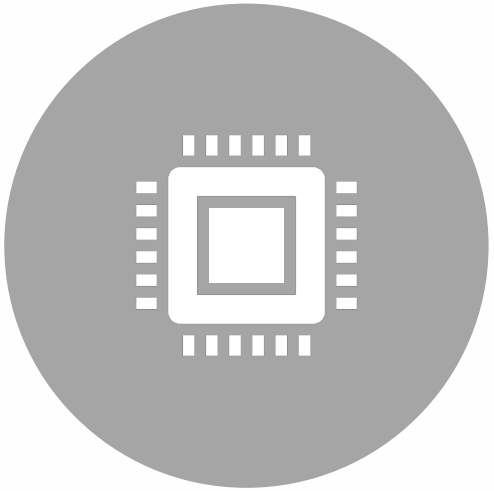
Source: Dr. Norsham, PSM1 SCSJ Class 2021 notes

Noraini Ibrahim, SC UTM 2022 ©

Type of PSM



SYSTEM DEVELOPMENT-BASED PROJECT



SOFTWARE ENGINEERING RESEARCH-BASED PROJECT

Source: Dr. Norsham, PSM1 SCSJ Class 2021 notes

Noraini Ibrahim, SC UTM 2022 ©

PSM Type #1 – System Development

- Must use a contemporary system development methodology (e.g Agile, RUP, Component based SE, Incremental development & etc)

- Construct software requirements model, software architecture, design model and test cases with state-of-the-art methods and tools to solve a real-world problem (must have stakeholder) from any domains (e.g healthcare, education, ecommerce & etc)

Source: Dr. Norsham, PSM1 SCSJ Class 2021 notes

Noraini Ibrahim, SC UTM 2022 ©

PSM Type #1 – System Development

- Involve
  - **Requirement analysis & Specification** – defining what the system should do
    - Deliverable : Software Requirement Specification (SRS)
  - **Design**- defining the organization of the system
    - Deliverable : Software Design Description (SDD)
  - **Implementation** –implementing the system
    - Deliverable : Coding of system
  - **Testing**– checking that it does what the customer wants
    - Deliverable : Software Testing Document (STD)

- **SRS, SDD & STD** – must be attached in PSM Report

Source: Dr. Norsham, PSM1 SCSJ Class 2021 notes

Noraini Ibrahim, SC UTM 2022 ©

PSM Type #1– System Development

Sample of previous projects

- Sign Language Mobile Learning System
- House Rental Management System
- Home Workout Mobile Application using Augmented Reality
- Mobile Based Augmented Reality Application as Measuring Tool
- Visual-based Vocabulary Assistance Application (ViVA)
- Restaurant Dine-In Reservation System
- Development Of Allowance Management Module For Malaysia Public Exam Invigilator Appointment System
- EasyLearn - English Vocabulary Learning Application Using Gamification Approach
- Detection System for Suspicious Unlawful Activities in the Marine Area

Source: Dr. Norsham, PSM1 SCSJ Class 2021 notes

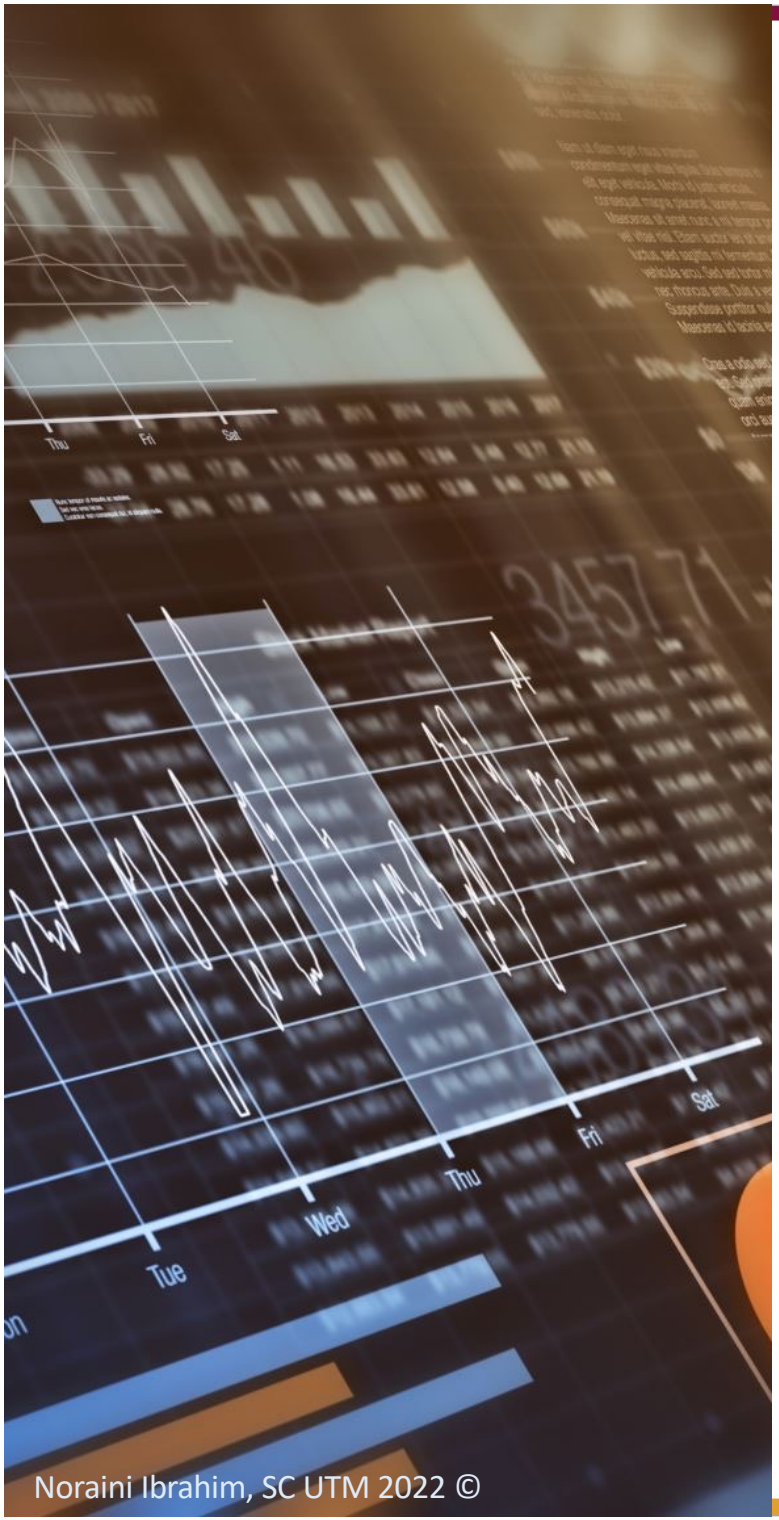
Noraini Ibrahim, SC UTM 2022 ©

PSM Type #2 - Research

- Any study related to software engineering technologies (i.e: **tools, methods, processes and quality focus**) and applications.
- **Research framework**
  - logical steps in guiding the research such as determining what things will be delivered, measured, what are the inputs to each steps and outputs of the research.
- **Data analysis** and **measurement** techniques basically depend on the research nature and the research question.
- **Somehow, must involve programming.**

Source: Dr. Norsham, PSM1 SCSJ Class 2021 notes

Noraini Ibrahim, SC UTM 2022 ©



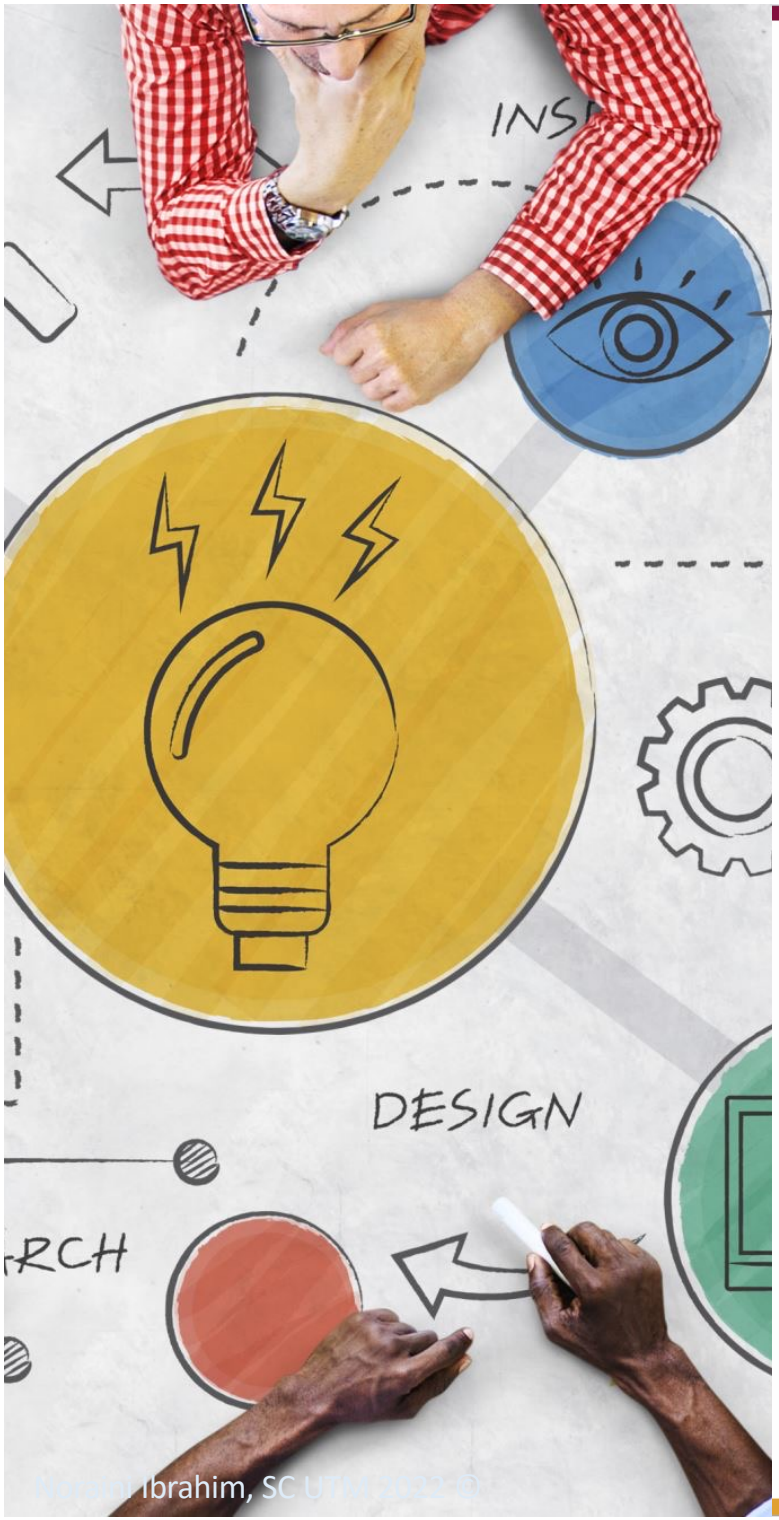
Noraini Ibrahim, SC UTM 2022 ©

PSM Type #2 - Research

Sample of previous projects

- Stock price prediction using machine learning
- Incisor Malocclusion Classification using Convolutional Neural Network
- Pairwise Testing approach based on Ontology and Negative Selection Algorithm
- HCI of Cargo Inspection System (Image Analysis Software)
- Machine Translation Using Natural Language Processor
- Learning Analytics on Student Engagement through Gamification in Massive Open Online Course
- Data Analytics For Predicting Covid-19 Cases Using Machine Learning Approaches
- An Extended Approach In Visual Programming Language Using Humanoid Robot
- Enhancing Motivation Among High School Students in Aceh With Gamified E-learning Design

Source: Dr. Norsham, PSM1 SCSJ Class 2021 notes



PSM1 Objectives

To evaluate the students on:

1. Identifying relevant information pertaining to project needs from a variety of resources.
2. Explaining and applying project development methodologies appropriate to the project.
3. Designing, planning and proposing a project according to user requirements.

Source: Dr. Norsham, PSM1 SCSJ Class 2021 notes

PSM1 Report

- Chapter 1- Introduction
- Chapter 2- Literature Review
- Chapter 3- Project / Research Methodology
- Chapter 4- Requirement Analysis and Design (System-based) / Research Design (Research-based)
- Chapter 5- Conclusion
- Appendices : Gantt Chart, Survey/Questionnaires, SRS, SDD, STD (System-based)

Noraini Ibrahim, SC UTM 2022 ©

PSM2 Report

- Chapter 1- Introduction
- Chapter 2- Literature Review
- Chapter 3- Project / Research Methodology
- Chapter 4- Requirement Analysis and Design (System-based) / Research Design (Research-based)
- Chapter 5 – Implementation and Testing
- Chapter 6- Conclusion
- Appendices : Gantt Chart, Survey/Questionnaires, SRS, SDD, STD (System-based)

Noraini Ibrahim, SC UTM 2022 ©

Main References

- SC PSM Website
  http://engineering.utm.my/computing/psm/

- Specific related PSM SECJ Evaluation Forms
  - eLearning (student)
  - Email & Google Form (supervisors & examiners)

Source: Dr. Norsham, PSM1 SCSJ Class 2021 notes

Noraini Ibrahim, SC UTM 2022 ©

Q & A