Sample Weekly Planner
Unit 4: Software development

The unit planner below represents a simultaneous approach (when a class is completing the SAT and working on a SAC) to delivering Unit 4: Software development. It is a sample guide only and teachers are advised to consider their own contexts when implementing this unit and when developing learning activities. Consideration should be given to the student cohort and available resources. Teachers should modify this sample weekly planner according to relevant school events.

Those wishing to adopt the sequential approach can modify this planner accordingly.

|  |
| --- |
| **Sequential approach** |
| **Area of study** | **Suggested time allocation (weeks)** |
| 1. Software development: development and evaluation\* | Weeks 1–9\*\* |
| 2. Cybersecurity: software security | Weeks 10–14\*\* |

|  |
| --- |
| **Simultaneous approach** |
| **Area of study** | **Suggested time allocation (weeks)** |
| 1. Software development: development and evaluation\* | Weeks 1–13\*\* |
| 2. Cybersecurity: software security | Weeks 8–13\*\* |

\* Unit 4 Outcome 1 forms part of the School-assessed Task.

\*\* Please note that the duration of each area of study is indicative only.

|  |  |  |  |
| --- | --- | --- | --- |
| **Week** | **Unit and area of study** | **Topic/description** | **Learning activities** |
| **Area of Study 1: Software development: development and evaluation** |
| 1 | Unit 4 Area of Study 1 | Data structuresValidation techniques (refresh)Programming practice:* data structures

Students working on their SATSAT Authentication sessions | * Examine familiar existing solutions and identify examples of effective and efficient validation techniques.
* Explore data structures within the selected programming language/s, which assist with the efficient organisation and manipulation of data.
* Practise the use of a range of generic features within the selected programming language/s that may be beneficial for students to implement within their SAT projects.

**Preparing students for the Unit 4 Outcome 1 SAT**Teachers should review SAT requirements for U4 O1 with students by going through the requirements of the task, administration and compliance within the task and the establishment of processes for authentication.**Unit 4 Outcome 1 SAT Authentication** Students work on Criteria 6–10 during class time.Students meet with teachers to monitor progress and update the Administration Record Form. |
| 2 | Unit 4 Area of Study 1 | Software testing techniques:* error types
* testing tables
* construction of test data

Recording the progress of projects (refresh)Students working on their SATSAT Authentication sessions | * Demonstrate how common errors within the selected programming language appear, and provide students with a set of strategies to minimise these errors.
* Model the use of debugging techniques and other informal testing approaches, such as breakpoints.
* Provide students with opportunities to effectively document testing of solutions.
* Explore how to document progress on project plans through annotation, adjustments, logs or through the use of project management software.

**Unit 4 Outcome 1 SAT Authentication** Students work on Criteria 6–10 during class time.Students meet with teachers to monitor progress and update the Administration Record Form. |
| 3 | Unit 4 Area of Study 1 | File and data managementProgramming practice:* data management and protection strategies

Students working on their SATSAT Authentication sessions | * Discuss file management strategies. Students then synthesise the discussion with their own research to recommend an appropriate file management strategy for other students.
* Research different back-up techniques, highlighting the key characteristics of each technique and advantages/disadvantages for use.
* Explore how effective data management and protection strategies could be implemented into software modules.
* Provide students with a framework they can use to develop data management strategies.
* Examine data and file disposal strategies used by government departments and private organisations.

**Unit 4 Outcome 1 SAT Authentication** Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Administration Record Form. |
| 4 | Unit 4 Area of Study 1 | Access to dataEfficient and effective solutionsDevelopment models (refresh)Students working on their SATSAT Authentication sessions | * Compare how different data structures, storage media and transmission media affect access to data.
* Practise the calculation of time to transmit data from one media to another.
* Use system tools to observe how efficiency of data access is affected by different system conditions.
* Identify characteristics of effective/ineffective solutions from a series of mini-case studies.
* Identify characteristics of efficient/inefficient solutions from a series of mini-case studies.
* Identify development models and link to the PSM, highlighting key characteristics and advantages of use.

**Unit 4 Outcome 1 SAT Authentication** Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Administration Record Form. |
| 5 | Unit 4 Area of Study 1 | Evaluating solutions and project plansFactors that influence the effectiveness of development modelsStudents working on their SATSAT Authentication sessions | * Based on mini-case studies, students prepare an evaluation strategy for existing familiar solutions.
* Evaluate existing familiar solutions using teacher-provided or student-generated criteria.
* Using project management explore how different development models impact project plans, and how different factors impact their effectiveness.
* Provide students with a framework to develop a strategy for evaluating the effectiveness of development models.

**Unit 4 Outcome 1 SAT Authentication** Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Administration Record Form. |
| 6 | Unit 4 Area of Study 1 | Usability testingDocumenting usability testingStudents working on their SATSAT Authentication sessions | * Provide students with a framework for planning and documenting usability testing.
* Based on mini-case studies, students plan usability testing that focuses on teacher-provided criteria.
* Based on familiar existing solutions, students collaborate to plan, carry out and document a series of usability tests.

**Unit 4 Outcome 1 SAT Authentication** Students work on Criterion 6–10 during class time.Students meet with teacher to monitor progress and update the Administration Record Form. |
| 7 | Unit 4 Area of Study 1 | Students working on their SATSAT Authentication sessions | **Unit 4 Outcome 1 SAT Authentication** Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Administration Record Form. |
| **Area of Study 2: Cybersecurity: data and information security** |
| 8 | Unit 4 Area of Study 2 | Software development practices that meet goals and objectivesKey legislation around data practicesStudents working on their SATSAT Authentication sessions | * Discuss the outcome, and inform students of U4O2 SAC date/s and conditions, as per school guidelines.
* Discuss software development goals and objectives.
* Compare key features of relevant legislation and consider how these may impact on software development and data practices.

**Unit 4 Outcome 1 SAT Authentication**Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Administration Record Form. |
| 9 | Unit 4 Area of Study 2 | Data integrityImpact of ineffective strategies on data integrityEthics:* software development practices
* using software solutions

Students working on their SATSAT Authentication sessions | * Analyse mini-case studies that contain small to medium sets of data, and identify the level of data integrity present in the data set.
* Discuss how ineffective strategies reduce data integrity and consider the impact reduced data integrity has on organisational operations and decision-making.
* Explore a range of contextually-appropriate, ethically-challenging scenarios and allow students time to attempt to work their way through the scenario and debate possible actions.

**Unit 4 Outcome 1 SAT Authentication** Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Administration Record Form. |
| 10 | Unit 4 Area of Study 2 | Software security and data security vulnerabilitiesWeb application risksManaging risks posed by software acquired from third partiesStudents working on their SATSAT Authentication sessions | * Role-play social engineering techniques.
* Analyse media articles that discuss data breaches.
* Research the technical underpinnings of web application vulnerabilities, and the risks they pose to a range of stakeholders.
* Identify examples of when/how third-party applications may undermine operating system security.

**Unit 4 Outcome 1 SAT Authentication** Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Administration Record Form. |
| 11 | Unit 4 Area of Study 2 | Physical and software security controlsStrategies to protect against software security and data security vulnerabilitiesSoftware auditing and testing strategiesStudents working on their SATSAT Authentication sessions | * Research software auditing and testing strategies to better understand risk minimisation.
* Demonstrate how encryption works, and protects data and individuals working on public Wi-Fi networks using a physical cipher and/or network scanners.
* Examine release notes for operating system and software updates.
* Discuss how version control techniques protect software development practices from accidental and malicious threats.

**Unit 4 Outcome 1 SAT Authentication** Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Administration Record Form. |
| 12 | Unit 4 Area of Study 1 | Evaluating the effectiveness of software development security strategiesRisk management strategiesStudents working on their SATSAT Authentication sessions | * Research potential risk management strategy frameworks, and identify necessary key features.
* Research existing risk management strategies.
* Analyse examples of how evaluation criteria for software development security strategies may be structured.

**Unit 4 Outcome 1 SAT Authentication** Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Administration Record Form. |
| 13 | Unit 4 Area of Study 2Unit 3 and Unit 4 | **Unit 4 Outcome 2 SAC** SAT Submission\*Examination Preparation | **Unit 4 Outcome 2 SAC****Outcome:** Respond to a teacher-provided case study to examine the current software development security strategies of an organisation, identifying the risks and the consequences of ineffective strategies and recommend a risk management plan to improve current security practices.**Timeframe:** 1–2 hours**Format (teacher discretion):**Case study with:* structured questions
* a written report
* a multimedia report

**Task:** Students respond to a teacher-provided case study using one of the approved formats.**Unit 4 Outcome 1 SAT Submission**Students submit each component of the SAT to be assessed against the performance descriptors provided by VCAA. Teachers should moderate student results internally (within the class, across multiple classes of the same study or with partner schools) to ensure consistency of marking.* Theory presentations based on student requirements.
* Deconstruction of previous examination case studies and questions.
* Completion of practice examination papers (in parts and/or entirety).
* Preparation of revision materials.
* Unpacking of feedback provided by past Examination Reports.
* Self-evaluating responses to questions and prompts and refining responses as required.
 |
| 14 | Unit 3 and Unit 4  | Examination preparation | * Theory presentations based on student requirements.
* Deconstruction of previous examination case studies and questions.
* Completion of practice examination papers (in parts and/or entirety).
* Preparation of revision materials.
* Unpacking of feedback provided by past Examination Reports.
* Self-evaluating responses to questions and prompts and refining responses as required.
 |

\*SAT Submission date/s should take into account the following:

* Internal school programs and key dates
* Sufficient time to assess and moderate student submissions
* Sufficient time to enter SAT criteria scores into VASS.