# Knowledge Evidence – Some Preliminary notes

Research and Written Submission

Weekly – weeks: 2 to 10

**Semester 1:**

ICTICT418 – Week 2

ICTICT509 – Week 3

ICTDBS502 – Week 4

ICTICT517 – Week 5

ICTPRG418 – Week 6

ICTPRG527 – Week 7

ICTPRG503 – Week 8

**Semester 2:**

ICTPRG520 – Week 2

ICTPRG502 – Week 3

ICTPRG529 – Week 4

ICTPRG523 – Week 5

ICTGAM528 – Week 6

ICTPRG604 – Week 7

ICTPRG504 – Week 8

ICTPRG532 – Week 9

ICTWEB503 – Week 10

**Knowledge Evidence Questions**

**Semester 1**

**ICTICT418 - Contribute to copyright, ethics and privacy in an information technology environment**

1. Discuss codes of ethics pertinent to the computing industry

Google: “Australian Computer Society code of professional conduct”

1. Discuss federal and state or territory legislation and policy relevant to an ICT environment and relating to:
   * access and equity – anti-discrimination laws
   * copyright and intellectual property – Copyright Act
   * workplace health and safety (WHS) – WHS Act
   * privacy – Privacy Act and Privacy Principles
2. What are organisational communication processes and procedures – Instructions as to how to communicate with staff and clients, etc
3. Discuss organisational requirements for customer service – would have policy(ies) and procedure(s), instructions for staff in induction documents, regular staff briefings reviewing these organisational requirements.
4. Discuss the security features of server operating systems – Google: “security features of server operating systems”
5. Outline two sample system security procedures. - Google: “sample system security procedures”

**ICTICT509 - Gather data to identify business requirements**

1. What is a client business domain? How might it be relevant to understanding the needs of the client project? – Domain – area of business focus, purpose, structure etc. Important to understanding project requirements.
2. In relation to a web-based software project, outline current industry accepted hardware and software products applicable to users (PC, Laptop, Computer Tablet, Phone, Robots, etc, Browser), the web-hosting (EG: Search for web hosting for ASP.Net), and to developers (PC, Laptop).
3. What are programming standards? (Detail outlining how programming will be structured formatted, etc, for a team of developers.)
4. List stakeholders and outline their respective roles in a web-based software project. (Client employees, program users, administrators, managers, ACS, programmers, systems analysis, project manager, testers, graphic designers, …)
5. Outline 2 approaches or procedures applicable to gathering requirements for a web-based software project (Review: **\_SA5\_SelectedKnowledgeEvidenceInfo**, such as: 01\_UserNeedsAnalysis\_Models.pdf).
6. Describe what communication protocols and/or functionality might be required for a web-based software project. (Google: communication protocols web-based program)

**ICTDBS502 - Design a database**

1. Outline a series of steps that might be taken in analysing a client’s requirements so as to establish:
   1. A conceptual data model, (Google: conceptual data model.)
   2. A complete entity relationship diagram, and…
   3. Required queries and reports. (Review: **\_SA5\_SelectedKnowledgeEvidenceInfo**, such as: 02\_ERAndTables.doc).
   4. What are the primary components of a conceptual data model? (Google: conceptual data model.)
2. Explain how data redundancy is identified. (Google: Normalisation)
3. What are the primary components of a database management system (DBMS)? (Google: components of a database management system (DBMS))
4. Explain encryption and authentication as these apply to database security features. (Google: encryption and authentication)
5. What are (describe / give examples of): data types and data structures. (Google: database data types or data structures)
6. Describe the functions and features of databases. (Google: functions and features of databases)
7. What is a logical data model? Why is it important to database queries, screens and reports? (Google: database logical data model, Review ICTDBS502 Learner Guide.)
8. What is an object model. How might it be important to database queries, screens and reports? (Google: object model.)
9. Explain the term ‘scalability’ as it applies to databases. (Google: database scalability.)

**ICTICT517 - Match ICT needs with the strategic direction of the organisation**

1. What are the key sections that would be included within an action plan for a software development project?

Method or strategy

Prioritised schedule (as identified in Part 4)

Timeframe or target

Organisational policies and procedures check

Standards (if required)

Method or strategy

1. Organisations generally have a strategic plan outlining goals and objectives for business growth and development. How might you anticipate and plan for technical solutions to assist the organisation with its strategic growth? See assignment document: ICTICT511\_AT1\_PE\_TQM\_v1\_.docx
2. How would you look to assess alternate options that an organisation might purchase or develop to support their technical requirements? See assignment document: ICTICT511\_AT1\_PE\_TQM\_v1\_.docx
3. List and describe 5 current technologies that have appeared on the market over the last few years. For you to research

**ICTPRG418 - Apply intermediate programming skills in another language**

**See folder**: \_Java1\_SelectedKnowledgeEvidenceInfo

1. What are dynamic variables? Variable whose content changes while a program is running.
2. Describe in detail how small and medium-size application development projects might differ? Differ in numbers of entities (tables), screens, reports, etc, or equivalent. Additional development team members. Greater focus on managing the project, communications, standards, programming approach, etc.
3. For a small single text file application, how might file handling and arrays be handled? *(Provide extended detail, examples, diagrams, code and/or pseudo code to demonstrate your understanding)*. See **IP Address Database** Example in Java folder.
4. Provide a description or example of a user-defined data structure. Array, ArrayList, Linked List Binary Tree, Struct, Record, Class, Object…
5. Describe a limited range of development methodologies and their application. Waterfall (Traditional), Agile, etc…
6. Outline the principles associated with developing a programming language *(such as Java, C#.Net, Python, etc.)*.

See: DevelopmentPrinciplesForProgrammingLanguages\_Schünemann.pdf

**ICTPRG527 - Apply intermediate object-oriented language skills**

1. Explain data structures. ICTDBS502, Q6
2. Explain small-size and medium-size application development. - ICTPRG418, Q2
3. Describe the following object-oriented programming concepts:
   1. Classes and Objects
   2. Inheritance,
   3. Polymorphism
   4. Method Overloading
   5. Association
   6. Multiple Inheritance
4. Define object-oriented programming language
5. In relation to a program with a graphical user interface (GUI):
   1. Outline the steps you would take in setting up such a program.
   2. Describe what programming you would have to put in place to allow the user to interact with the program.
6. Describe internal and external programming / technical documentation.

**ICTPRG503 - Debug and monitor applications**

1. Name at least two (2) examples of the following: (Note: word limit does not apply)
   1. Logging frameworks
   2. Debugging tools
   3. Profiling tools
2. Give reasons on why you would use the following tools when developing an application:
   1. Profiling Tools
   2. Logging and tracing tools
3. Explain the basic principles of:

* computer hardware, networking and components - ICTICT509, Q2
* database-management systems. - ICTDBS502, Q4
* object-oriented programming. - ICTPRG527, Q3
* open-source development tools - ICTPRG523, Q3

1. Java and C# are among the more popular object-oriented programming languages used today. What makes them different from other non-object-oriented programming language?
2. Using an example, discuss the merits (advantages) of open-source development tools.
3. Describe in detail how small and medium-size application development projects might differ in terms of their respective development processes, required tools and techniques.
4. Outline the software development life cycle (SDLC). – ICTPRG418, Q5

**Knowledge Evidence Questions**

**Semester 2**

**ICTPRG520 - Validate an application design against specifications HERE**

1. Explain the database design and implementation. – ICTDBS502
2. Draw samples of three (3) UML diagrams and explain how each would assist in a software development project. <https://tallyfy.com/uml-diagram/>
3. Outline current software development methodologies – ICTPRG418, Q5
4. Describe, in detail, the system development life cycle (SDLC) – ICTPRG418, Q5
5. Explain object-oriented programming - ICTPRG527, Q3
6. Describe open-source development tools - ICTPRG503, Q3
7. Describe three (3) software-testing techniques.
   1. Blackbox, Whitebox and Greybox
   2. Unit, Integration, System and Acceptance

**ICTPRG502 - Manage a project using software management tools**

1. List and describe 5 Knowledge Areas of Project Management, **or** explain the basic principles of project management. Scope, Time, Cost, Quality, HRM, Risk, Communication, Procurement, Integration, Stakeholders.
2. Describe the key features of the software development life cycle (SDLC) – ICTPRG418, Q5
3. Outline two (2) reasons why software specifications are important.
4. Identify the methods and importance of version control.

**ICTPRG529 - Apply testing techniques for software development**

1. Describe the characteristics of the programming language. - ICTPRG418, Q6
2. How does an IPO chart assist in the analysis and design of a software project? Helps identify, Input, Processes (in general terms), Outputs and potentially storage.
3. Outline software development life cycle (SDLC) methodologies. – ICTPRG418, Q5
4. Define system layers such as: How do/might each of these inpact on a potential project?
   1. the data network
   2. hardware
   3. operating system
   4. database management systems
   5. web servers
   6. application servers, and…
   7. client deployment *(deploying software to the hardware that is to be used by a client).*
5. Explain the processes and techniques related to small-size application development. - ICTPRG418, Q2

**ICTPRG523 - Apply advanced programming skills in another language**

1. Identify and describe three (3) programming languages. Indicate which of these provide for the development of GUI interfaces.
2. Identify and describe languages for a GUI environment. – Q1 above.
3. Describe in detail how medium-size and large-scale application development projects might differ?
4. Describe the complex data structures: Linked Lists and Binary Trees.
5. How would you link or connect a third-party supplied library within your software project? Java – Identify and download a required third party library. Open a project, go to Libraries for that project, right mouse click, search and locate the applicable library file(s).

**ICTGAM528 - Create games for mobile devices**

1. List and describe two (2) currently successful mobile game devices. Playstation, Nintendo, phones,…
2. Summarise three (3) current tools, technologies and programming languages needed for creating applications on mobile devices products. Lua, Unity, C++, Andoid Studio,…
3. Summarise the technical constraints that mobile devices place on design and development of games. Compatability – hardware, O/S. Controllers, screen dimensions and resolution, RAM, SSD, …
4. Outline suitable programming languages for mobile devices. – Q2, above
5. Describe how you might estimate the cost of a mobile game development project. Identify requirements, prepare a detailed project plan (in project management software) so as to estimate scope and time…
6. Explain the importance of assessing risks within a mobile software development project. Need to pre-consider potential risks to ensure a quality outcome delivered within set time and cost constraints.
7. List and describe the roles of five (5) different team members that may be required in the process of creating a game for a mobile device.
8. Outline two techniques for concept visualisation and development. See documents: VisualisationTechniques.pdf and Visualisatlion\_siggraph.pdf in Third Party Material

**ICTPRG604 - Create cloud computing services**

1. Which of the following are the most appropriate development tools for creating web services that can be deployed on the cloud and describe each tool?

* UML Modelling Tools
* WSDL Generators
* Microsoft Visio
* Netbeans

1. Suggest two other such development tools and indicate how they are applicable.
2. Draw a diagram clearly illustrating how a client connects to a cloud-based application, which in turn connects to a web service. Clearly note and describe the hardware and software (infrastructure) required for each section or aspect of this.
3. List and explain what would need to be considered in applying object-oriented programming to a cloud-based solution.
4. Describe (potentially with one or more supporting diagram(s)) how to access and manipulate the database content on the web using HTML and XML.
5. Define the term “big data” in relation to cloud computing.

**ICTPRG504 - Deploy an application to a production environment**

1. Describe the basic principles of database management systems. - ICTDBS502, Q4
2. Under what circumstances might you use a Waterfall Software Development Life Cycle? Describe the standard phases within a Waterfall SDLC.
3. Define system layers such as: - ICTPRG529, Q4
   1. the data network
   2. hardware
   3. operating system
   4. database management systems
   5. web servers
   6. application servers, and…
   7. client deployment (deploying software to the hardware that is to be used by a client).
4. When writing code or scripts for deploying your application to a production environment, what are the components that you will need to consider in order for it to be ready for the end-users?
5. Why is it important to know the policies, procedures and security protocols of an organisation when deploying software?

**ICTPRG532 - Apply advanced object-oriented language skills**

1. Describe the required technologies for developing web applications.
2. Explain the different approaches to implementing inter-process communication in either Java or C#.Net.
3. What project management and development strategies would you utilise to develop a large-scale application?
4. Explain the different testing techniques that you can use in distributed application development.
5. Describe in detail the steps in implementing a third-party supplied library for performing common programming tasks.

**ICTWEB503 - Create web-based programs**

1. Describe in detail:
   1. Three (3) methods or techniques that would assist you in analysing a client’s web project
   2. Three (3) considerations or approaches that would assist you in designing a client’s web project
2. What are programming control structures and how might they be applicable to a web-based application project?
3. Summarise web programming concepts including:
   1. authentication and web security
   2. hypertext transfer protocol (HTTP)
   3. session management
   4. stateless programming.