Unpacking the 2015 Software Development Examination

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#Digicon16

GENERAL INFORMATION

Examination specifications

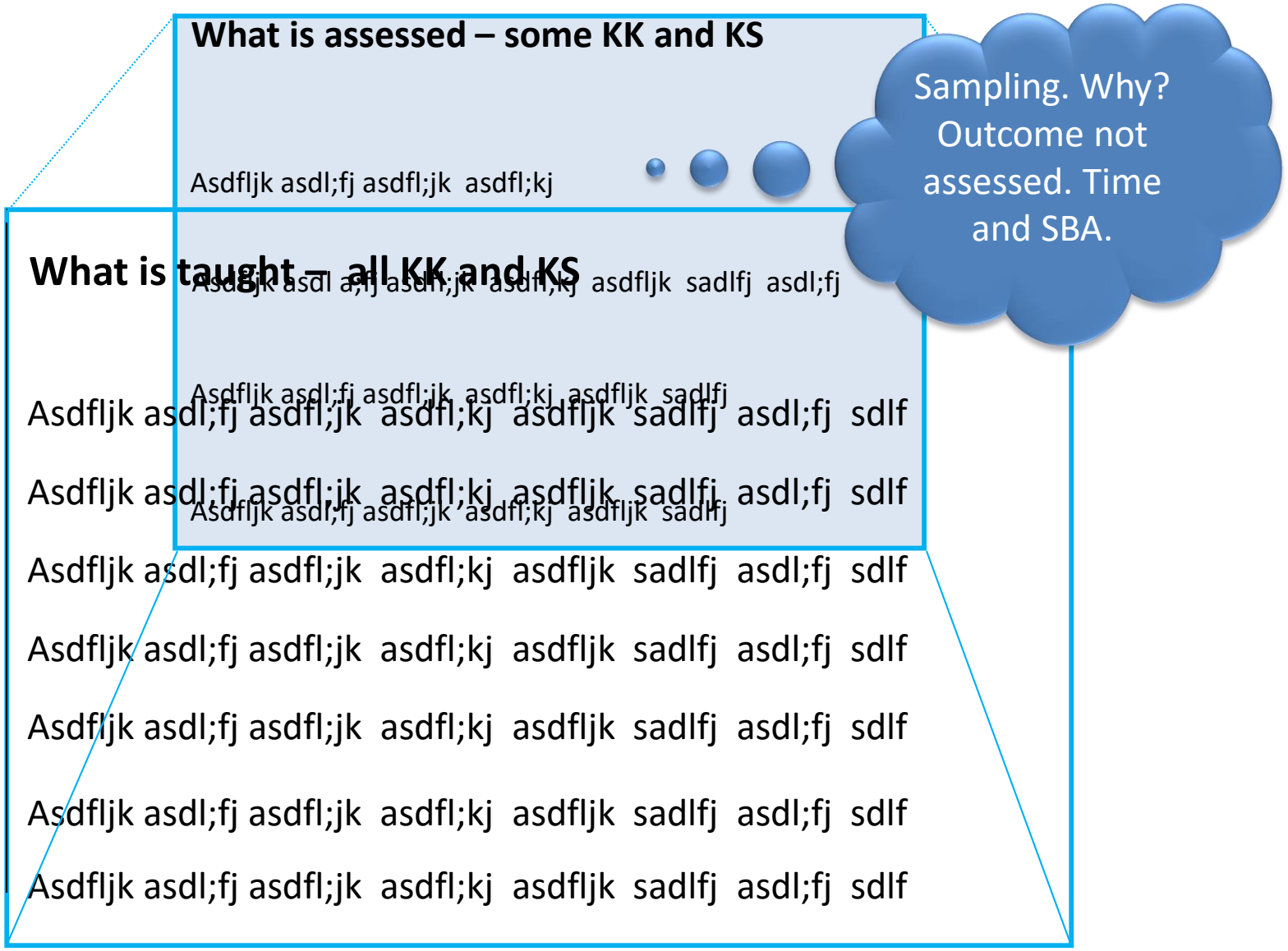
- Both units approx equally weighted
- Approx respective weighting of each area of study
- Random sampling of KK and KS – not outcomes
- Glossary/PSM
- Bell-curve – cognitive demand

For the purposes of this study design and associated assessment the following definitions will apply

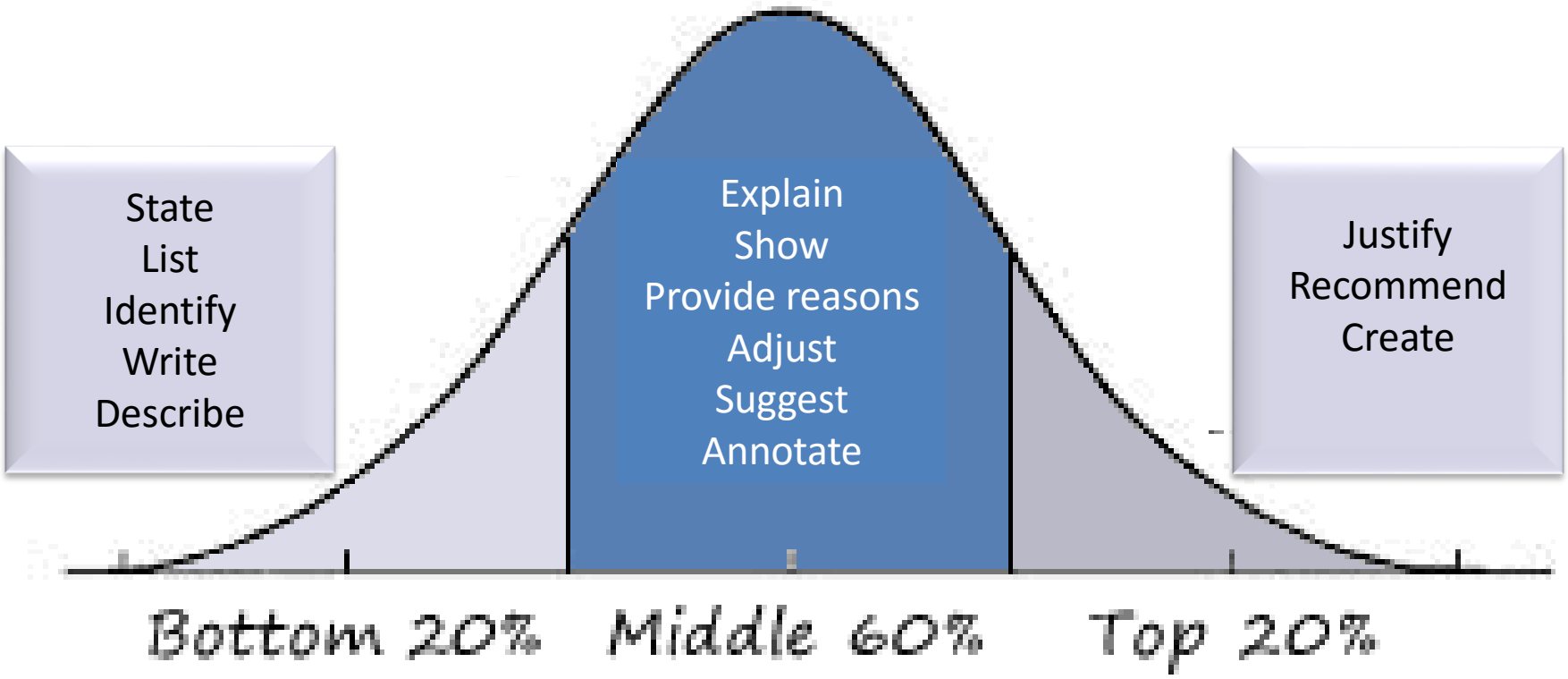
Examination specifications

SECTION A MCQ 20%	SECTION B SHORT ANSWER 20%	SECTION C CASE STUDY (short/extended) 60%

What's taught; what's assessed?



Bell curve - cognitive demand



General advice

Know the difference between efficiency and effectiveness

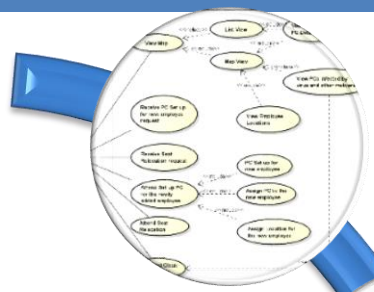
Know the difference between validation, testing, evaluation

Relate the answer to the case study/stimulus when required

Use study-specific terminology

2015 EXAMINATION REVIEW

Assessment SD exam 2015



Use Cases

77% scored 0 out of 4 (B2)

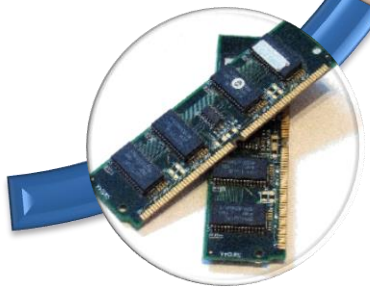
Testing

66% scored 0 out of 3 (C4a)
49% scored 0 out of 2 (C4c)

Poorly handled

Conflict

39%, 56%, 63%
scored 0 out of 2 (C14)



Arrays/File Size/Memory

51% scored 0 out of 3 (B3b, B3d)
44% scored 0 out of 2 (C13a)

Section A – relevant questions from 2015 examination paper

Question	Content focus	Question	Content focus
1	PSM	11	Threats to data integrity
2	Data collection (Analysis)	12	Validation
3 – 5	Psuedocode, deskchecking, processing features	14	Characteristics of wired and wireless networks
6	Documentation	15	File handling procedures
7	Binary search	17	Project management
8	Diagrammatical represenations	18	Evaluation strategies
9	Files and records	19	Diagrammatical representations
10	Evaluation techniques	20	Characteristics of wireless networks

2 questions **(10%)** not in new study

Section B – relevant questions from 2015 examination paper

Question	Content focus
1	Internal documentation & naming conventions
2	Use Case diagrams
3	One and two-dimensional arrays
4	Physical and software controls to secure data in a networked environment
5	Digital systems (U4O2 – stretch)

Section C – relevant questions from 2015 examination paper

Question	Content focus		
1	SRS document	8	Factors influencing design, UX
2	Non-functional requirements	9	Validation, constructing test data
3	DFD's	12	Data management procedures (backup/archiving)
4	Deskchecking	13	Data management (file size/access)
5	Data types	14	Conflict
6	Data structures	15	Psuedocode
7	VPNs vs the Internet		

4 marks out of 60 (2 Qns) not in new study

2016 SAMPLE EXAMINATION

Curriculum connections - PSM

Question 14

An organisation requires a solution that will overcome an existing problem of unauthorised employees accessing files. It also requires a solution that allows data to be exchanged between two information systems. The solution should attract new customers to the business, who would be assured that their personal details are protected.

Which of the following design factors will be affected by these constraints?

A. security, interoperability, marketability

B. affordability, marketability, usability

C. security, affordability, marketability

D. usability, security, affordability

Analysis typically answers the 'what questions' – what is needed to solve a problem, given particular circumstances? It involves:

- Determining the solution requirements. What output is the solution to provide? What data is needed to produce the output? What functions must the solution provide? These requirements can be classified as being functional, that is, what the solution is required to do, and non-functional, which describes the attributes the solution should possess including useability, reliability, portability, robustness, maintainability. Tools to assist in determining the solution requirements include context diagrams, data flow diagrams and use cases.
- Identifying the constraints on the solution. What conditions need to be considered when designing a solution? Typical constraints include economic, such as cost and time; technical, such as speed of processing, capacity, availability of equipment, compatibility and security; social, such as level of expertise of users; legal, such as ownership and privacy of data requirements; and useability, such as usefulness and ease of use of solutions.
- Determining the scope of the solution. The scope states the boundaries or parameters of the solution. It

Curriculum connections – KS (U3O2)

Question 3

XML describes a set of rules for

A. displaying words in a document.

B. inserting pictures into a document.

C. designing the layout of a web page.

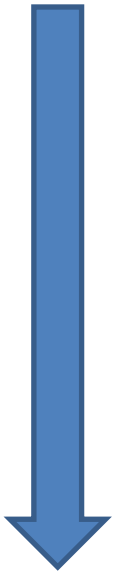
D. formatting data for transferring and storage.

Question 12 (3 marks)

When a parking officer issues a parking ticket, the following record (in XML format) is sent from the mobile phone application to the council's fines payments system.

```
</infringement>
<?xml version="1.0" encoding="UTF-8"?>
<infringement>
    <reg_pl>                    </reg_pl>
    <bay_num>                   </bay_num>
    <park_off>                  </park_off>
    <c_make>                    </c_make>
    <c_model>                   </c_model>
    <c_col>                     </c_col>
    <reason>                    </reason>
    <time>                      </time>
    <date>                      </date>
</infringement>
```

List **three** fields that the mobile phone application will send to the fines payments system in the XML file.



Approaches to problem solving

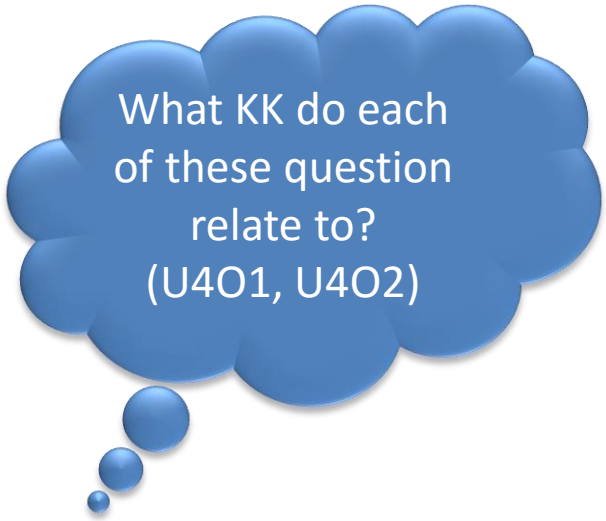
- methods of representing designs, including data dictionaries, object descriptions, mock-ups and pseudocode
- formatting and structural characteristics of input and output, including XML file formats
- a programming language as a method for developing working modules that meet specific needs

Question 11

Olga was using the internet on her computer when a pop-up screen appeared, warning her that her computer had a virus. The screen also provided a link to a 'computer expert' who would log on to her computer and remove the virus when credit card details are provided for a payment of $100.

This is an example of

A. spam.
B. a worm.
C. a trojan.
D. phishing.



Question 12

The following numbers are to be sorted in ascending order.

14, 7, 69, 27, 15, 23, 11, 10

After the second pass, the numbers are in the following order.

7, 10, 69, 27, 15, 23, 11, 14

What type of algorithm was used to sort the array?

A. quick sort
B. bubble sort
C. binary sort
D. selection sort

Question 13

The following is an example of pseudocode.

```
WHILE X is not equal to 9
      Add 1 to X
END WHILE
```

The lines of pseudocode above are best described as a

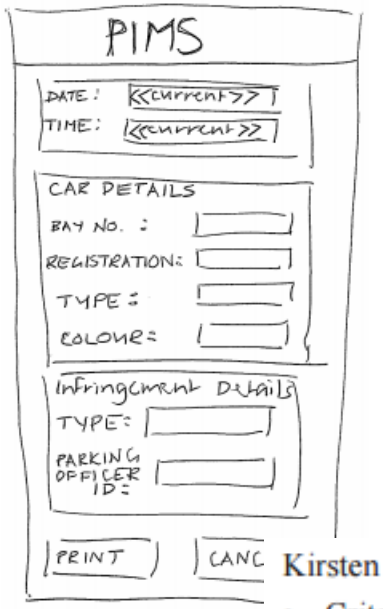
A. control structure.
B. procedure.
C. function.
D. method.

Question 7 (4 marks)

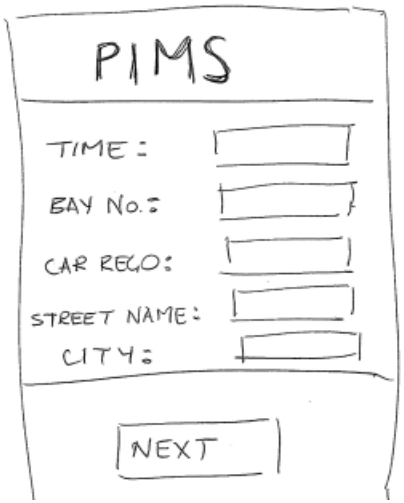
Kirsten has been working on the interface for the PIMS. She knows that data relating to a car that has overstayed has to be sent to a parking officer's mobile phone. The interface design is very important as the parking officer will need to input all the relevant information in order to print a parking ticket.

Kirsten has produced two options for the parking ticket entry details – Option A and Option B.

Option A



Option B



What KK do each of these question relate to? (U3O2)

Kirsten has determined the following criteria for evaluating the most appropriate design idea:

- Criterion 1 – The PIMS solution will provide parking tickets in a form that is complete.
- Criterion 2 – The PIMS solution user interface must be clear and easy to understand.

Which option – Option A or Option B – should Kirsten choose? Explain why.

Option _____

Explanation _____

_____

_____

Question generation techniques – driving questions

Unit 3, Outcome 2

Analyse and document a need or opportunity, generate alternative design ideas, represent the preferred solution design and formulate a project plan for creating the solution.

General driving key questions

for example

- List three constraints that could be apply to a particular situation
- Which entity is missing from the provided DFD?
- Suggest two design tools for representing the functionality of a solution
- Describe two considerations that should be made when formulating a project plan

Question generation techniques - modifying

Question 6

The *Privacy Act 1988* is best described as legislation that outlines how

A. individuals should use personal information.

B. organisations should collect and use health records.

C. organisations should collect and use personal information.

D. organisations should collect and use copyright information.

Different legislation
- Health Records 2001
- Copyright Act 1968

Question 5 (2 marks)

'When providing information to educate a worldwide audience, it is important that the information be presented in a culturally inclusive manner.'

Explain what the term 'culturally inclusive' means. In your explanation, provide an example of cultural inclusiveness in the context of providing information.

gender

(from informatics)

Question 2 (4 marks)

Kirsten will include constraints in the software requirements specifications (SRS) that she is writing.

State two different types of constraints that will influence the solution of the PIMS. Give an example of each constraint.

1 functional and
1 non-functional

Functional or
Non-functional requirements