



SEMESTER TEST / SEMESTERTOETS 3

MODULE CODE/KODE: ITRW 213

DURATION/DUUR: 60 min

EXAMINER/EKSAMINATOR: Imelda Smit

MARKS/PUNTE: 30

MODERATOR : Dr Roelien Goede

DATE/DATUM: 15-05-2013

TIME/TYD: 15h30

MEMORANDUM

Answer all the questions. ★ Beantwoord al die vrae.

Question | Vraag 1 [Chapter | Hoofstuk 8]

[21]

Study the following case study before you answer the questions:

Bestudeer die volgende gevallestudie voordat jy die vrae beantwoord:

At the NWU, we need to store data about each student, for instance; name, course enrolled, subjects passed and enrolled. Addresses (with contact numbers) are stored to be able to get hold of a student, send results and to bill a student (although billing is not included in THIS system). The system also keeps track of a student's results to be able to calculate an average at the end of the course. This determines whether a student passed with a distinction. Some subjects weigh more towards the average, some do not count towards the average.

1.1 List the steps to draw a detailed ERD

4 1.1 Lys die stappe wat gevolg moet word om 'n gedetailleerde ERD te teken.

1.2 Apply the steps to the case study.

10 1.2 Pas die stappe op die gevallestudie toe.

1.3 List the three normal form definitions you studied.

3 1.3 Lys die drie normaalvormdefinisies wat jy bestudeer het.

1.4 Apply the normal forms to your answer to question 1.2 to obtain normalised tables.

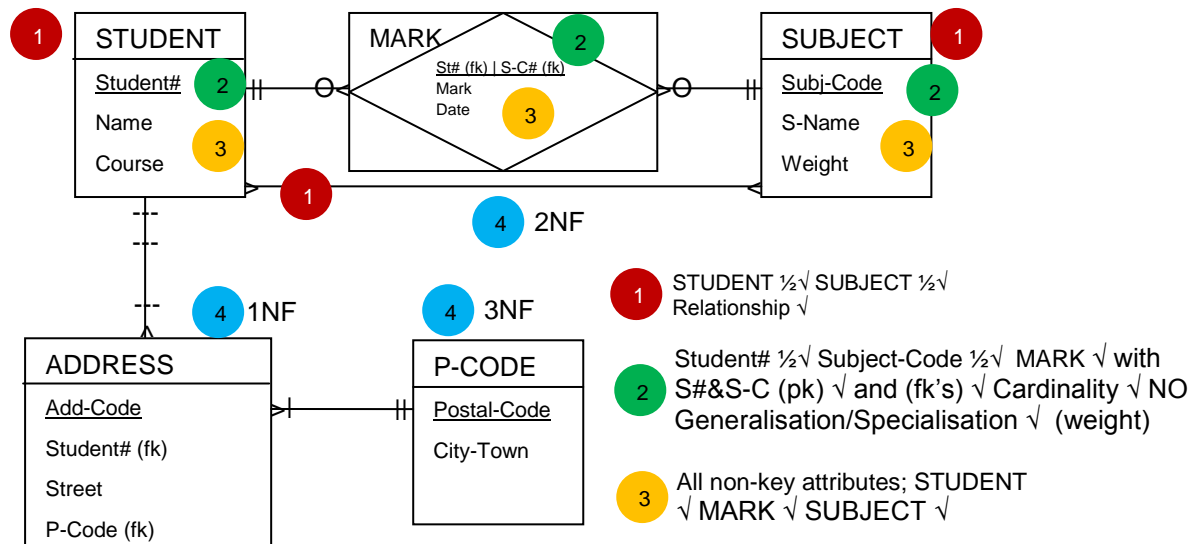
4 1.4 Pas die normaalvorms op jou antwoord op vraag 1.2 toe om genormaliseerde tabelle te verkry.

Answer: Refer p290-306 & video example

1.1

1. Context Data model ✓
WHAT?: Includes only entities and relationships
WHY?: To establish project scope
2. Key-based data model ✓
WHAT?: Eliminate nonspecific relationships | Add associative entities | Include primary and alternate keys | Precise cardinalities | Generalisation & specialisation
WHY?: To establish correct relationships
3. Fully attributed data model ✓
WHAT?: All remaining attributes | Subsetting criteria
WHY?: To compile full model
4. Normalised data model ✓
WHAT?: normalised tables
WHY?: To ensure controlled redundancy

1.2



- 1.3 1NF – an entity whose attributes have no more than one value for a single instance of that entity (repeating groups) ✓
 2NF – an entity whose non-primary key attributes are dependent on the full primary key (partial dependencies) ✓
 3NF – an entity whose non-primary key attributes are not dependent on any other non-primary key attribute (transitive dependency) ✓
- 1.4 STUDENT (student#, name, course) ½✓
 SUBJECT (subject-code, subject-name, weight) ½✓
 MARK (student# (fk), subject-code (fk), name, course) ✓ <2NF>
 ADDRESS (address-code, student# (fk), street, postal-code (fk)) ✓ <1NF>
 POSTAL-CODE (postal-code, city-town) ✓ <3NF>

Mark allocation: See allocated marks: ✓ or ½✓ as indicated.

Question | Vraag 2 [Chapter | Hoofstuk 9]

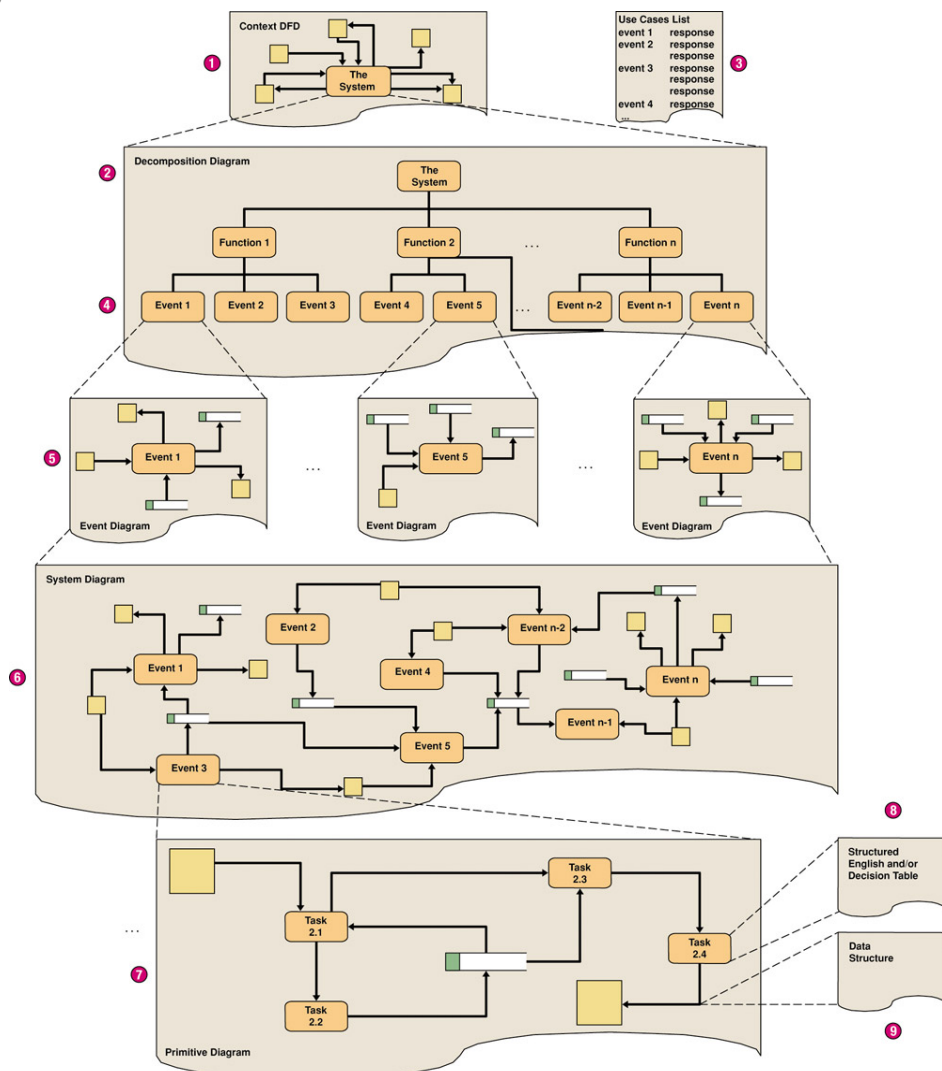
[9]

Name and explain the NINE (9) steps in the process modeling strategy. Illustrate your answer with diagrams.

Noem en verduidelik die NEGE (9) stappe in die prosesmodelleringstrategie. Illustreer jou antwoord met diagramme.

Answer: Refer p 335-336

1. Draw context DFD to establish initial project scope. ½✓
2. Draw functional decomposition diagram to partition the system into subsystems. ½✓
3. Create event-response or use-case list for the system to define events for which the system must have a response. ½✓
4. Add one process, called the event handler to the decomposition diagram. ½✓
5. OPTIONALLY: Draw an event DFD (or event handler) for each event. ½✓
6. Merge event DFDs into a system diagram (or, for larger systems, subsystem diagrams). ½✓
7. Draw detailed, primitive DFDs for the more complex event handlers. ½✓
8. Use Structured English & Decision Tables to represent the logic of each elementary process. ½✓
9. Represent data structures. ½✓



Mark allocation: See allocated marks: Each step ½✓, illustrated ½✓ per number