NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
VAAL TRIANGLE CAMPUS

SEMESTER TEST ★ SEMESTERTOETS

MODULE CODE/KODE	**ITRW 213**	DURATION/DUUR	**2h**
EXAMINER/EKSAMINATOR	**Imelda Smit**	MARKS/PUNTE	**60**
MODERATOR	**Prof Roelien Goede**	DATE/DATUM	**16-04-2014**
		TIME/TYD	**12:00**

MEMORANDUM

Answer all the questions. ★ Beantwoord al die vrae.

Question | Vraag 1 [Chapter | Hoofstuk 1-3, 5] [15]

Study the incomplete ten commandments of computer ethics: Bestudeer die onvolledige tien gebooie van rekenaaretiek:

Thou shalt:
1. _____
2. Always use a computer in ways that insure consideration and respect for your fellow humans.

Thou shalt not:
3. _____
4. Interfere with other people's computer work.
5. _____
6. _____
7. Use a computer to bear false witness.
8. _____
9. Use other people's computer resources without authorisation or proper compensation.
10. Appropriate other people's intellectual output.

1.1 Fill in any 3 commandments. The order is not important. 3 1.1 Vul enige 3 gebooie in. Die volgorde is nie belangrik nie.

Answer: p. 16
1.1
Thou shalt:
1. Think about the social consequences of the program you are writing or the system you are designing.
2. Always use a computer in ways that insure consideration and respect for your fellow humans.

Thou shalt not:
3. Use a computer to harm other people.
4. Interfere with other people's computer work.
5. Snoop around in other people's computer files.
6. Use a computer to steal.
7. Use a computer to bear false witness.
8. Copy or use propriety software for which you have not paid.
9. Use other people's computer resources without authorisation or proper compensation.
10. Appropriate other people's intellectual output.

Mark allocation: ✓ per correct missing commandment.

Study the following five underlying principles for systems development: Bestudeer die volgende vyf onderliggende beginsels van stelselontwikkeling:

1. Establish phases and activities.
2. Manage the process and projects.
3. Justify IS as capital investments.
4. Do not be afraid to cancel; or revise scope.
5. Design systems for growth and change.

1.2 Add any four missing principles.

4 1.2 Voeg enige vier beginsels wat uitgelaat is, by.

Answer: p. 72-76

1.2 Principle:

1. Get the system users involved.
2. Use a problem-solving approach.
3. Establish phases and activities.
4. Document through development.
5. Establish standards.
6. Manage the process and projects.
7. Justify IS as capital investments.
8. Do not be afraid to cancel; or revise scope.
9. Divide and conquer.
10. Design systems for growth and change.

Mark allocation: ✓ per missing principle.

During this semester we studied strategies and methods:

- We can build software in-house or buy off the shelve.
- We may use methodologies prescriptive or adaptive.
- We have methodologies that are model-driven or product-driven.
- Model-driven approaches can be object-oriented or focused on data or processes.
- Product-driven approaches focus on prototyping or writing code.

A movement called agile methods advocates that systems analysts should have a toolbox of methods that includes tools and techniques from a variety of methodologies. As a matter of fact, tools and techniques should be based on the problem and situation.

Deur dié semester het ons strategieë en metodes bestudeer:

- Ons kan programmatuur self bou of dit van die rak af koop.
- Ons kan metodologieë op 'n voorgeskrewe of aangepaste manier gebruik.
- Ons het metodologieë wat model- of produkgedrewe is.
- Modelgedrewe benaderings kan objekgeoriënteerd wees of fokus op data of prosesse.
- Produkgedrewe benaderings fokus op prototipering of die skryf van kode.

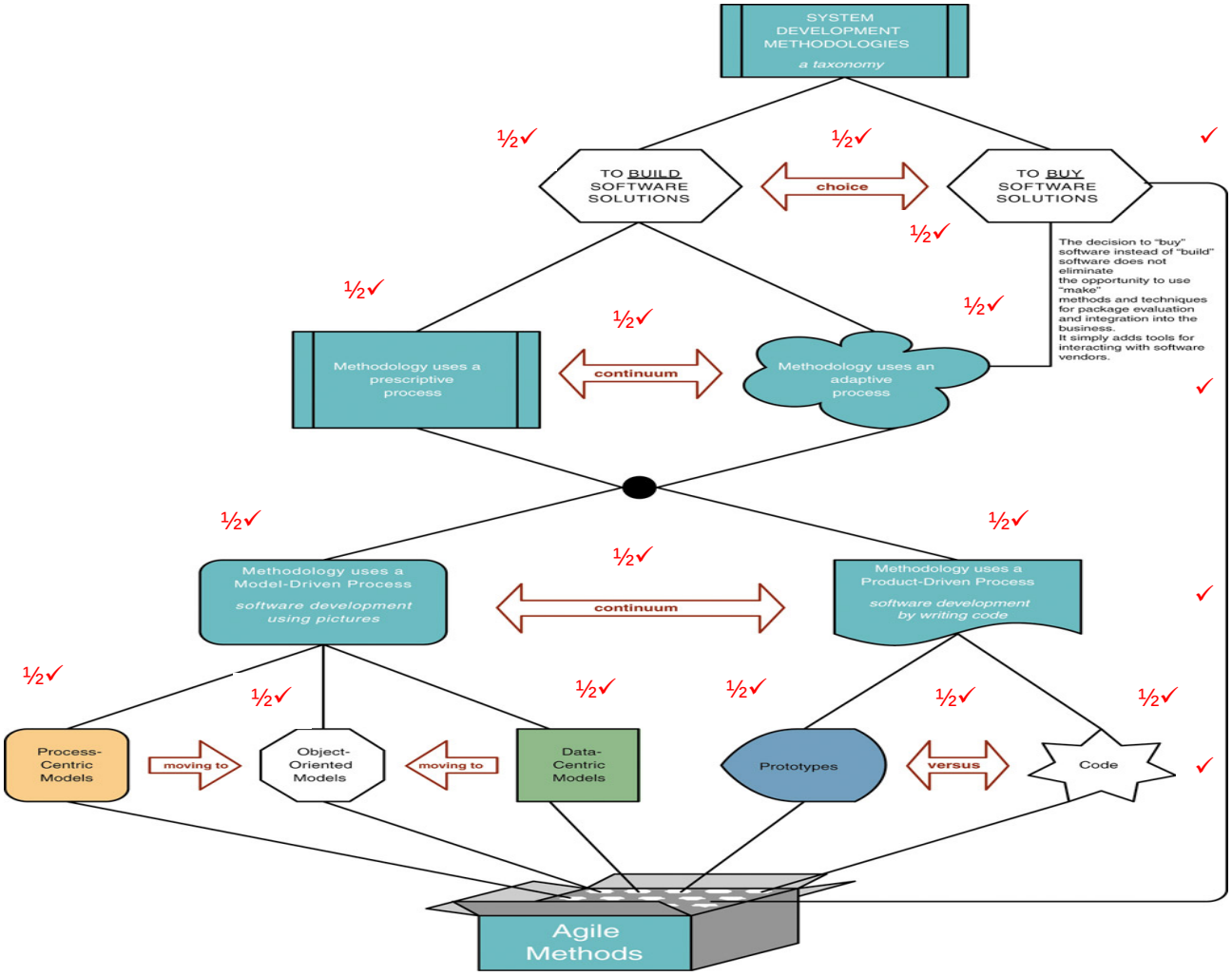
'n Beweging genoem ratse metodes, benadruk dat stelselontleders 'n gereedskapkis van metodes behoort te hê wat hulpmiddels en tegnieke vanuit 'n verskeidenheid metodologieë, insluit. Die hulpmiddels en tegnieke wat mens gebruik, behoort gebaseer te wees op die probleem en situasie.

1.3 Draw a picture of how you understand a "taxonomy for systems development methodologies and strategies".

8 1.3 Teken 'n prentjie van hoe jy 'n "taksonomie vir stelselontwikkeling metodologieë en strategieë" verstaan.

Answer: p. 93

1.3



Mark allocation: ✓ per level. ½✓ per block. A maximum of 8 marks.

Question | Vraag 2 [Chapter | Hoofstuk 4] [10]

2.1 Study the project tasks with durations and predecessors and draw a Gantt chart. Use backward scheduling, with a finishing date of Fri 9 May. You may use the calendar supplied.
2.1 Bestudeer die projektake met elkeen se duur en voorgangers en teken 'n Gantt-kaart. Gebruik agteruitskedulering met 'n voltooiingsdatum van Vr 9 Mei. Jy mag die kalendar wat verskaf is, gebruik.

Task	Duration (days)	Predecessor
M	3	none
N	4	M
P	5	M
R	8	M
S	3	N,P
T	3	R,S

Mon	Tue	Wed	Thu	Fri
14	15	16	17	18
21	22	23	24	25
28	29	30	1	2
5	6	7	8	9

CALENDAR APRIL ✶ MAY

6

2.2 When must the project start?
2.3 Is there any slack time allowed on the project? If there is, on which task(s)?

2 2.2 Wanneer moet die projek begin?
2 2.3 Is daar enige slentertyd gelaat op die projek? Indien daar is, op watter taak/take?

Answer: p. 127
2.1

Gantt chart

Task	Duration (Days)	Pre-decessor	WEEK: March 14							WEEK: March 21							WEEK: March 28							WEEK: May 5				
			M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F
M	3	none	➲																									
N	4	M				↳																						
P	5	M				↳																						
R	8	M				↳																						
S	3	N,P																↳										
T	3	R,S																						↳				

Holiday | Weekend | Finish on Fri 9 April 2014, start on Tue 15 March

✓ for each correct row, deduct ✓ when start date is incorrect or holidays and weekend are used to work on, deduct ½✓ when predecessors are not indicated.

2.2 Tuesday ✓ 15 March ✓
2.3 Yes,✓ there is slack on task N of one day. ✓

Mark allocation: See marks allocated.

Question | Vraag 3 [Chapter | Hoofstuk 6] [13]

Keep your group project in mind when you answer the following questions:

3.1 Identify two interviewees from your environment. Why did you select them?

3.2 How will you prepare for the interview?

3.3 Prepare an interview guide for the interview with one of the interviewees you identified in 3.1.

Hou jou groepprojek in gedagte wanneer jy die volgende vrae beantwoord:

2 3.1 Identifiseer twee mense met wie jy 'n onderhoud sal reël. Hoekom het jy juis hulle gekies?

3 3.2 Hoe sal jy voorberei vir die onderhoud?

8 3.2 Berei 'n onderhoudsgids vir die onderhoud met een van die persone wat jy in 3.1 geïdentifiseer het, voor.

Answer: p. 222-228

3.1 Any two people from the users of the project system, e.g. owner, manager, worker. An organisational chart may aid this process. ✓✓

3.2 (1) Learn as much as possible from the individual prior to the interview; strengths, fears, biases, motivations. Take these into account when preparing for the interview. (2) Make an appointment with the person. (3) Time allocated – between 30 and 60 min; the higher up in management, the shorter the time. (4) Get the permission of the person's supervisor if it is a clerical, service or blue-collar worker. (5) Make sure a venue is available for the interview. Never interview an individual with co-workers (analyst's or interviewee's) present. ✓✓✓

3.3

Interviewee:	Jeff Bentley, Accounts Receivable Manager
Date:	January 19, 2003
Time:	1:30 P.M.
Place:	Room 223, Admin. Bldg.
Subject:	Current Credit-Checking Policy

Time Allocated	Interviewer Question or Objective	Interviewee Response
1 to 2 min.	**Objective** Open the interview: • Introduce ourselves. • Thank Mr. Bentley for his valuable time. • State the purpose of the interview — to obtain an understanding of the existing credit-checking policies.	
21 minutes	Time allotted for questions and objectives	
21 minutes	Time allotted for questions and objectives	
9 minutes	Time allotted for follow-up questions and redirection	
30 minutes	Time allotted for interview (1:30 p.m. - 2:00 p.m.)	
General Comments and Notes:		

Heading ✓✓ Columns ✓ Objective ✓✓

Indication of "questions" ✓✓

Follow-up ✓ Notes ✓ MAX 9 marks

Mark allocation: See allocated marks.

Question | Vraag 4 [Chapter | Hoofstuk 7] [12]

4.1 List the steps followed when modelling user requirements with Use-Cases.

4 4.1 Noem die stappe wat gevolg moet word wanneer gebruikervereistes met Gebruiksgevalle gemodelleer word?

Answer: p. 251-260
STEPS:

1. Identify business actors ✓
2. Identify business requirements Use-Cases ✓
3. Construct the Use-Case model diagram ✓
4. Document business requirements Use-Case narratives ✓

Mark allocation: See allocated marks.

Study the following case study:

Coastline Systems Consulting is a provider of managed computer networks and web services located in Durban, Kwa-Zulu Natal. The staff of seven IT technicians, web designers, and systems integrators provides a range of networking, computer hardware, and software solutions to area businesses. Coastline works with clients to analyze their business needs. They then provide a packaged solution that often combines web services, networking and computer hardware, purchased software, and custom programming. In addition to the seven technicians, Coastline has one receptionist/bookkeeper. As a small organisation, Coastline is an informal, "shirt-sleeve" environment. Everyone is on a first-name basis, even with Peter Zulu, the president.

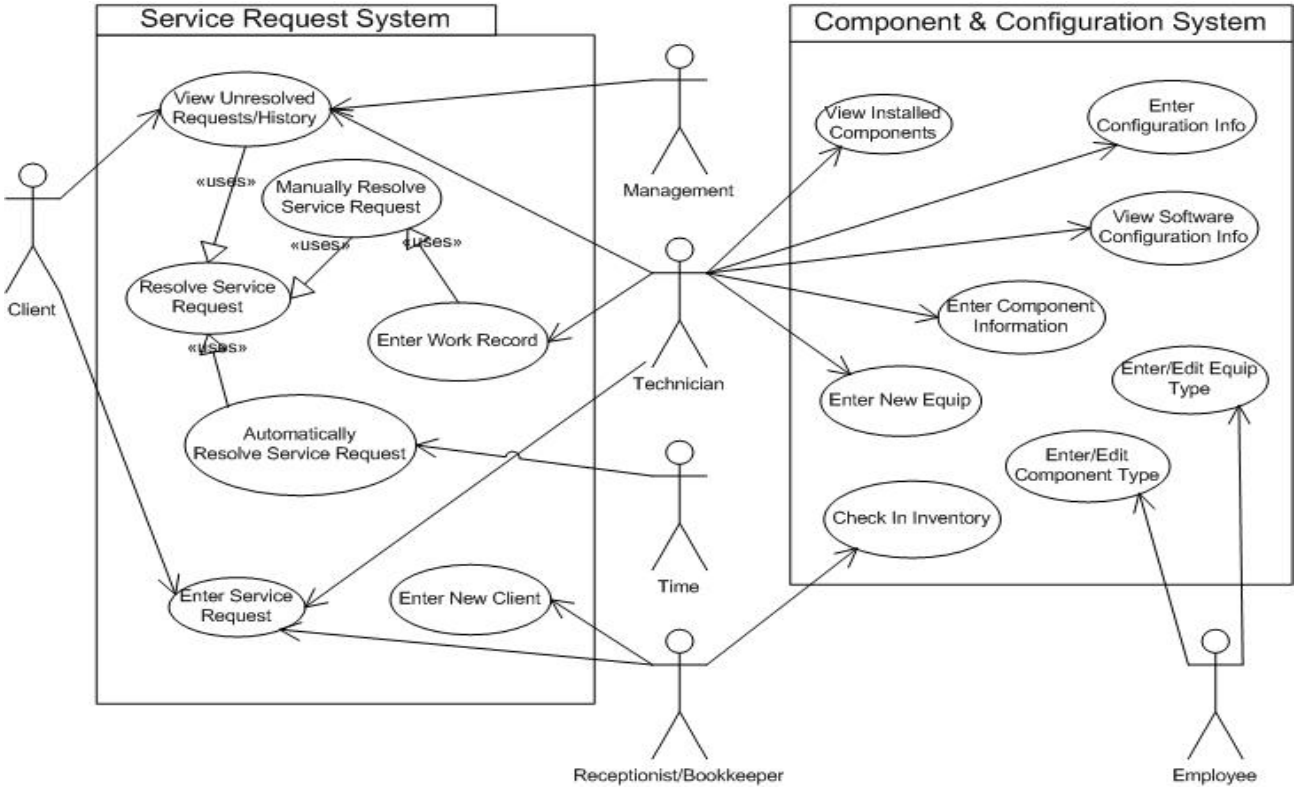
As Coastline's client base and the complexity of installations have grown, keeping track of the clients' hardware and software configurations has become a nightmare. Each client PC contains various components, such as video cards, NICs, and keyboards which are replaced at different times and so have differing warranty periods that must be tracked. Every client has multiple PCs and network devices, whose passwords and configurations must be accessible by technicians in the Coastline office and in the field. One technician is "on-call" every weekend, meaning the data has to be accessible from home as well. This has to be organized in a way that is easily accessible by any technician at any time or place but secure from unauthorized users.

In addition to tracking components and passwords, clients call and e-mail the Coastline office whenever they have any kind of hardware or software problem. These requests and the work done to resolve them need to be organised and documented.

The president, Peter Zulu, wants to develop a system that is both responsive to clients and helpful to technicians. He would like to see a system that allows technicians to access and update client equipment hardware and software configurations. He wants an easy way for technicians to track the installation of new hardware components, possibly using barcode scanning. He wants the system to allow clients to directly enter their service requests, allow technicians to document the work done on those requests, and for everyone to be able to see the history and status of each request. Mr. Zulu also wants the system to be able to generate statistics and reports so he can pursue continuous improvement in this area.

The Use-Case diagram for the system has been drawn for your information:

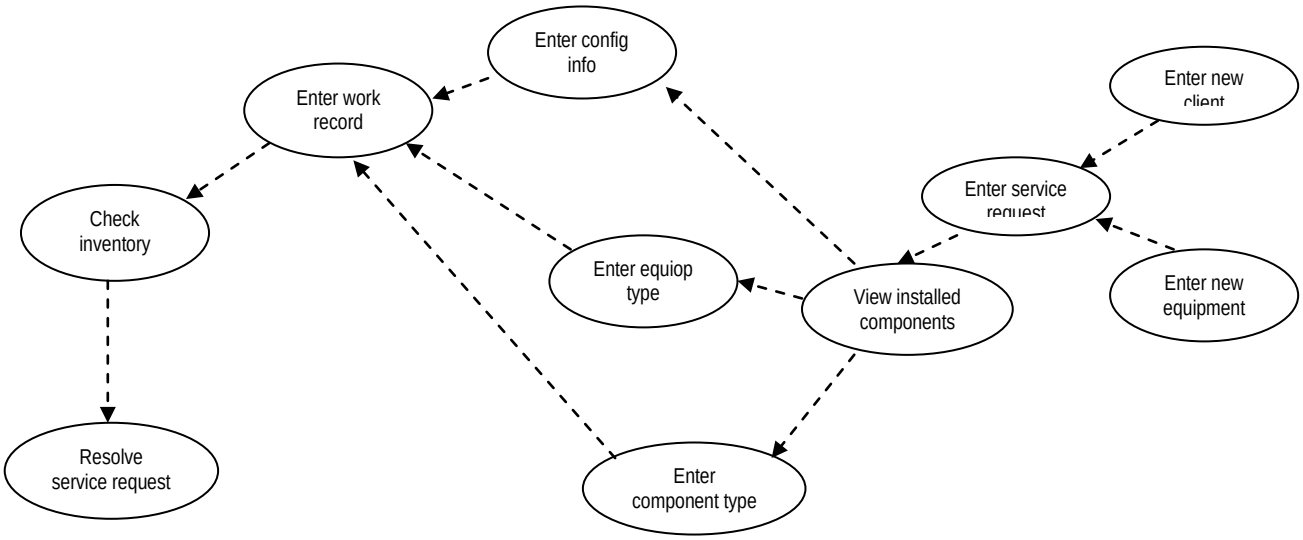
Die Gebruiksgevaldiagram vir die stelsel is geteken vir ter inligting:



4.2 Draw a Use-Case dependency diagram for the system.

8 4.2 Teken 'n Gebruiksgevalafhanklikheidsdiagram vir die stelsel.

Answer: p. 261-262



Mark allocation: See allocated marks.

Question | Vraag 5 [Chapter | Hoofstuk 8] [10]

Use the case study given in question 4 case study (or your project) to supply examples of the following:

5.1 A primary key
5.2 A foreign key
5.3 A compound key
5.4 An alternate key
5.5 A candidate key
5.6 Cardinality
5.7 Degree
5.8 Sub-setting criteria
5.9 Table(s) normalised from 1NF to 2NF

Gebruik die gevallestudie gegee in vraag 4 (of jul projek) om voorbeelde van die volgende te gee:

1 5.1 'n Primêre sleutel.
1 5.2 'n Vreemde sleutel.
1 5.3 'n Saamgestelde sleutel.
1 5.2 'n Alternatiewe sleutel.
1 5.2 'n Kandidaatsleutel.
1 5.2 "Cardinality".
1 5.2 Graad.
1 5.2 Verdelingskriteria.
2 5.2 Tabel(le) genormaliseer van 1NV tot 2NV.

Answer: Chapter 8

5.1 A primary key
Project number in the PROJECT entity ✓
5.2 A foreign key
Employee id in the ASSIGNMENT associate entity ✓
5.3 A compound key
Assignment id made up of project number, employee id and location id in the ASSIGNMENT associate entity ✓
5.4 An alternate key
Student name the STUDENT entity ✓
5.5 A candidate key
Student number | Student name the STUDENT entity ✓
5.6 Cardinality
Relationship between STUDENT and MODULE: a student takes ✓
5.7 Degree
Example: relationship of degree 3 (ternary); MODULE entity has relationship of degree 1 (unary); between MODULE, STUDENT relationship of degree 2 (binary) ✓
5.8 Sub-setting criteria
Gender and Race in the STUDENT entity ✓
5.9 Table(s) normalised from 1NF to 2NF
Transform an M:N relationship into an associative entity to form 4 tables (example), namely PROJECT, STUDENT, MODULE and ASSIGNMENT, all in 2NF when entity attributes addresses only that entity ✓✓
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)

Mark allocation: See allocated marks.

Example: