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Benodigdhede vir hierdie vraestel / Requirements for this paper:				Oopboek eksamen / Open book examination:	
Multikeusekaarte / Multi choice cards:		Nie-programmeerbare sakrekenaar / Non-programmable calculator:			
Grafiekpapier / Graphic paper:		Draagbare rekenaar / Laptop:			

EKSAMEN / EXAMINATION:	**Tweede Geleentheid / Second Opportunity June 2014**	KWALIFIKASIE / QUALIFICATION:	**B.Sc.(IT)**
MODULEKODE / MODULE CODE:	**ITRW213**	DUUR / DURATION:	**3 Ure / Hours**
MODULE BESKRYWING / SUBJECT:	**Systems Analysis & Design I / Stelselontleding & -ontwerp I**	MAKS / MAX:	**100**
EKSAMINATOR(E) / EXAMINER(S):	**Imelda Smit**	DATUM / DATE:	**10/07/2014**
MODERATOR(E) / MODERATOR(S):	**Prof Roelien Goede**	TYD / TIME:	**09:00**

Answer all the questions. ★ *Beantwoord al die vrae.*

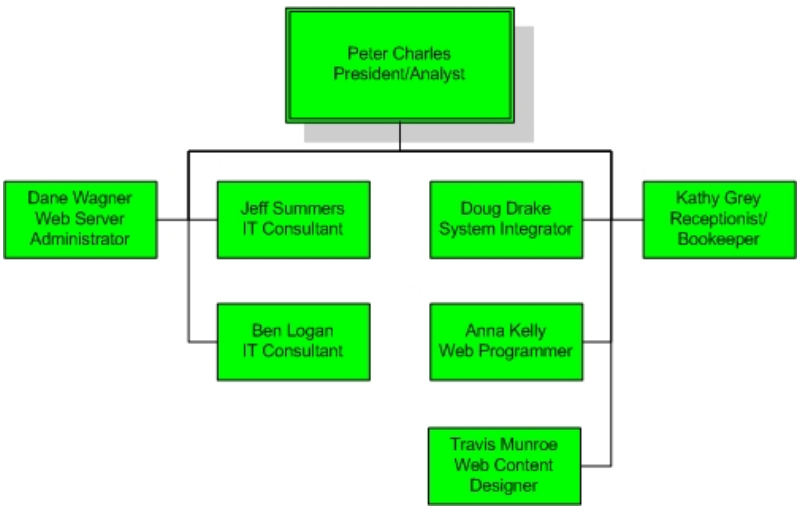
Read the case study before answering the questions | Lees die gevallestudie voordat jy die vrae beantwoord:

Case Background

Coastline Systems Consulting is a provider of managed computer networks and web services located in Durban, in the province of Kwa-Zulu Natal, South Africa. 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 analyse 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 Charles, the president.

Organisation Structure – Coastline Systems Consulting



Information Systems Facilities

PCs

⇒ Each technician works uses a Dell notebook:
  - o Pentium M class machines with 512 MB RAM, 30-50 GB hard drives

⇒ The bookkeeper/receptionist has a Dell Optiplex desktop running a Pentium 4, 256 MB RAM, and an 80 GB hard drive:

⇒ Operating systems - MS Windows Windows XP Professional

⇒ Tools - MS Office 2003 suite plus other software depending on use

⇒ Internet Browser – IE 6 and Mozilla FireFox

⇒ E-mail Client - Mozilla Thunderbird

⇒ Various inkjet and laser printers

Servers

⇒ Dell PowerEdge 2800 Server
  - o 1 GB of RAM, 80 GB RAID-5 hard drive storage
  - o Operating system - MS Windows Server 2003
  - o Providing DHCP, Security, and Internet Access, and Database Management (SQL Server 2000)

⇒ Dell PowerEdge 1850 Server
  - o Providing Web hosting
  - o Operating system – Windows Server 2003 with IIS

Networking

⇒ The company headquarters is equipped with wireless networking so notebooks can roam throughout the building. Notebooks also have integrated Ethernet NICs and modems so they can connect to the Internet at home and at clients' places of business.

The Problem

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 organised 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 Charles, 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. Charles also wants the system to be able to generate statistics and reports so he can pursue continuous improvement in this area.

QUESTION / VRAAG 1 [CONTEXT | KONTEKS] [23]

1.1 Name the **stakeholders** in the Systems Analysis and Design Process. Then identify the **stakeholders in this case study.** Indicate each **specific category**.	10	1.1 Noem die **aandeelhouers** in die Stelselontleding- en –ontwerpproses. Identifiseer dan die **aandeelhouers in hierdie gevallestudie**. Dui elkeen se **spesifieke kategorie** aan.
1.2 Draw the **Capacity Maturity Model**. Indicate each level with an explanation. Indicate **the level Coastline Systems Consulting is at** and motivate your answer.	8	1.2 Teken die Kapasiteitsgroei model. Dui elke vlak aan met 'n verduideliking. Dui aan op **watter vlak Coastline Systems Consulting is** en motiveer jou antwoord.
1.3 Regarding the job of a systems analyst: Use a table with two columns: • List the **skills you feel are important for an analyst** on the left-hand side. Focus on the four most important ones. • List **your strongest skills on the right-hand side**. Focus on the four most important ones. • **Map the two sets of skills**. **Do you think you have enough skills in common with analyst to be a good one?**	5	1.3 Die stelselontledingsberoep het betrekking: Gebruik 'n tabel met twee kolomme: • Lys die **vaardighede wat u voel belangrik is vir 'n ontleder** aan die linkerkant. Fokus op die vier belangrikstes. • Lys **jou sterkste vaardighede aan die regterkant**. Fokus op die vier belangrikstes. • **Beeld die twee stelle vaardighede op mekaar af**. **Dink jy dat jy genoeg vaardighede in gemeen met 'n ontleder om 'n goeie een te wees?**

QUESTION / VRAAG 2 [PROJECT MANAGEMENT | PROJEKBESTUUR] [14]

One of the CSC projects for an important client has been named Project X. It is still in the initial stage. Study Project X, with the following tasks (activities), its duration and predecessors:

Een van die CSC projekte vir 'n belangrike kliënt word Projek X genoem. Dit is nog in 'n vroeë stadium. Bestudeer Projek X, met die volgende take (aktiwiteite), hul duur en voorgangers:

Tasks	Duration (day)	Predecessors
A: Scope definition	5	None
B: Problem analysis	1	None
C: Requirements analysis	3	None
D: Logical design	4	A | B | C
E: Decision analysis	3	D
F:Physical design & integration	6	D
G: Construction & testing	10	E | F
H: Installation & delivery	2	G

2.1 Draw an **activity-on-node** network diagram for project X.	5	2.1 Teken 'n **aktiwiteit-op-node** netwerk diagram vir projek X.
2.2 Indicate **all the paths** on the network diagram.	3	2.2 Dui **al die paaie** op die netwerkdiagram aan.
2.3 Which one is **the critical path**? Why?	1	2.3 Watter een is **die kritiese pad**? Hoekom?
2.4 Which tasks have **slack time**? How much slack?	5	2.4 Watter take het **tydspeling**? Hoeveel speling?

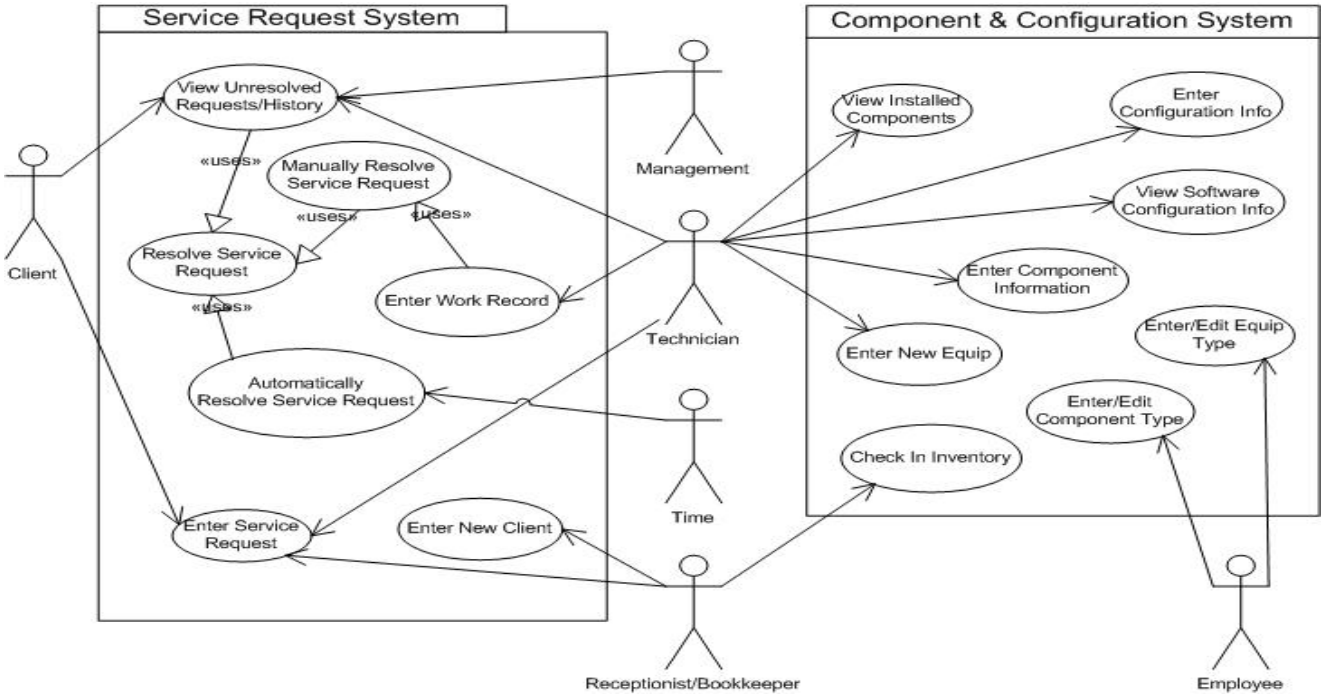
Question | Vraag 3 [FACT-FINDING | FEIT-INSAMELING] (13)

3.1 Compile a **table** that **lists the seven fact-finding techniques** you studied in the first column, **a short description of each** in the second column, **whether you would be able to use it in a fact-finding strategy** in the case study environment (yes | no) in the third column and **a motivation of the indication in column three**, in column four.	10	3.1 Stel 'n **tabel** saam wat **die sewe feit-insamelingstegnieke wat jy bestudeer het** in die eerste kolom lys, **'n kort beskrywing van elk** in die tweede kolom, **of jy dit sal kan aanwend in 'n feit-insamelingstrategie** vir die gevallestudie-omgewing (ja | nee) in die derde kolom en **'n motivering van die aanduiding in kolom drie**, in kolom vier.
3.2 Write out a **fact-finding strategy** for the case study, based on your answer to question 3.1.	3	3.2 Skryf die **feit-insamelingstrategie** vir die gevallestudie uit, gebaseer op jou antwoord op vraag 3.1.

Question | Vraag 4 [USE CASE MODELLING | GEBRUIKSGEVALMODELLERING] (14)

4.1 Explain the process of requirements use case modelling. | 4 | 4.1 Verduidelik die proses van gebruiksgevalmodellering vir die vasstelling van vereistes.

Study the use-case diagram for the system in the case study: | Bestudeer die gebruiksgeval diagram vir die stelsel in die gevallestudie:



4.2 Use the Use-Case diagram given to draw a Use-Case dependency diagram. | 10 | Gebruik die Gebruiksgevaldiagram wat gegee is om 'n Gebruiksgevalafhanklikheidsdiagram te teken.

Question | Vraag 5 [DATA & PROCESS MODELLING | DATA & PROSES MODELLERING] [27]

5.1 List the steps to draw a detailed ERD.	4	5.1 Lys die stappe gevolg om 'n gedetailleerde ERD te teken.
5.2 Apply the steps to the case study.	8	5.2 Pas die stappe op die gevallestudie toe.
5.3 List the three normal form definitions you studied.	3	5.3 Lys die drie normaalvormdefinisies wat jy bestudeer het.
5.4 The steps to do process modelling are: 1. Draw a context DFD 2. Draw a functional decomposition diagram 3. Create event-response or use-case list 4. Add one process, called the event handler to the decomposition diagram 5. OPTIONALLY: Draw an event DFD (or event handler) for each event 6. Merge event DFDs into a system diagram (or, for larger systems, subsystem diagrams) 7. Draw detailed, primitive DFDs 8. Use Structured English & Decision Tables 9. Represent data structures Do the sixth step for the system in the case study.	12	5.4 Die prosesmodelleringstappe is: 1. Teken 'n konteksDVD 2. Teken funksionele struktuurkaart 3. Skep 'n gebruiksgeval-lys 4. Voeg die gebeurtenishanteerder – 'n proses by die funksionele struktuurkaart 5. OPSIONEEL: Teken 'n gebeurtenisDVD (of gebeurtenishanteerder) vir elke gebeurtenis 6. Voeg die gebeurtenisDVDe saam in 'n stelsediagram (of, vir groter stelsels, substelse diagramme) 7. Teken gedetailleerde, primitiewe DVDe 8. Gebruik gestruktureerde Engels & Beslissingstabelle 9. Stel datastrukture voor Doen die sesde stap vir die stelsel in die gevallestudie.

QUESTION / VRAAG 6 [FEASIBILITY ANALYSIS & THE SYSTEM PROPOSAL | UITVOERBAARHEIDSANALISE & DIE STELSELVOORSTEL] [9]

We studied three Cost-Benefit Analysis (CBA) techniques, namely:

a) Payback Analysis
b) Return-on-Investment Analysis
c) Net Present Value

Explain the main focus of each with the value each brings to a project, and how you will use them in the CBA of your project.

Ons het drie Koste-voordele Analise (KVA) tegnieke bestudeer, naamlik:

a) Terugbetaal Analise
b) Opbrengs-op-Belegging Analise
c) Netto Huidige Waarde

Verduidelik die hooffokus van elk met die waarde wat elkeen tot 'n projek bydra, en hoe jy hulle sal gebruik in die KVA van jou projek.