



The University of Fiji

School of Science and Technology

Department of Computer Science/ Information Technology

ITC334

Cloud Computing

Semester II, 2013

Final Examination Paper

Time Allowed: 3 Hours [10 Minutes Extra Allowed For Reading the Paper]
Weighting: 50%
Total Marks: 100 marks.

	Section A:	
30 multiple choice questions	-	20 marks
	Section B:	
Short Answer Questions	-	30 marks
	Section C:	
Essay Writing (Answer 3 questions only)	-	30 marks
Total		100 marks

Instructions

- Show your answers clearly in each question to gain maximum marks.
- You may ask for extra sheets from the supervisors if the need arises.
- Do not forget to write your name and ID number on all the extra sheet(s) attached.
- Programmable calculators are not allowed.

Section A: Multiple Choices

(20 marks)

Identify the choice that best completes the statement or answers the question.

- 1) What is Cloud Computing replacing?
 - A. Corporate data centers
 - B. Expensive personal computer hardware
 - C. Expensive software upgrades
 - D. All of the above
- 2) What is the number one concern about cloud computing?
 - A. Too expensive
 - B. Security concerns
 - C. Too many platforms
 - D. Accessibility
- 3) Which of these companies is not a leader in cloud computing?
 - A. Google
 - B. Amazon
 - C. Blackboard
 - D. Microsoft
- 4) Which one of these is not a cloud computing pricing model?
 - A. Free
 - B. Pay Per Use
 - C. Subscription
 - D. Ladder
- 5) Which of these is not a major type of cloud computing usage?
 - A. Hardware as a Service
 - B. Platform as a Service
 - C. Software as a Service
 - D. Infrastructure as a Service
- 6) Which is not a major cloud computing platform?
 - A. Google 101
 - B. IBM Deep blue
 - C. Microsoft Azure
 - D. Amazon EC2
- 7) "Cloud" in cloud computing represents what?
 - A. Wireless
 - B. Hard drives
 - C. People
 - D. Internet
- 8) Which of these should a company consider before implementing cloud computing technology?
 - A. Employee satisfaction
 - B. Potential cost reduction
 - C. Information sensitivity
 - D. All of the above
- 9) What exactly is cloud computing?
 - A. A way to organize desktop computers
 - B. Lightweight software that takes up little space on a hard drive
 - C. Computing resources that can be accessed on demand, like electricity from a utility
 - D. The World Wide Web

- 10) What widely used service is built on cloud-computing technology?
 - A. Twitter
 - B. Gmail
 - C. YouTube
 - D. All of the above
- 11) Which of these techniques is vital for creating cloud-computing centers?
 - A. Visualization
 - B. Transubstantiation
 - C. Cannibalization
 - D. Insubordination
- 12) An internal cloud is...
 - A. An overhanging threat
 - B. A career risk for a CIO
 - C. A cloud that sits behind a corporate firewall
 - D. The group of knowledge workers who use a social network for water-cooler gossip
- 13) Cloud computing embraces many concepts that were previously touted as the next big thing in information technology. Which of these is not an antecedent of the cloud?
 - A. Software as a service
 - B. Utility computing
 - C. Grid computing
 - D. Desktop computing
- 14) The term "cloud computing" is a metaphor that originated in what?
 - A. Graphical depiction of computer architectures
 - B. Meteorological symbolism
 - C. Worries about an unclear future for computing architectures
 - D. The idea that computer users trust in magic
- 15) Amazon Web Services is which type of cloud computing distribution model?
 - A. Software as a Service
 - B. Platform as a Service
 - C. Infrastructure as a Service
 - D. Hardware as a Service
- 16) What is private cloud?
 - A. A standard cloud service offered via the Internet
 - B. A cloud architecture maintained within an enterprise data center
 - C. A cloud service inaccessible to anyone but the cultural elite
 - D. A cloud that sits behind a corporate firewall
- 17) What is the name of the organization helping to foster security standards for cloud computing?
 - A. Cloud Security Standards Working
 - B. Cloud Security Alliance
 - C. Cloud Security WatchDog
 - D. Security in the Cloud Alliance
- 18) Which of the following isn't an advantage of cloud?
 - A. No worries about running out of storage
 - B. Easier to maintain a cloud network
 - C. Immediate access to computing resources
 - D. Paying only for what you use
- 19) What feature does not belong in a private cloud?
 - A. Metered billing
 - B. Self-service portal

- C. Dial-home support
 - D. Rapid elasticity
- 20) Which of these services is not Platform as a Service?
- A. Force.com
 - B. Microsoft Azure
 - C. Amazon EC2
 - D. Joyent

Section B: Short Answer Questions

(60 marks)

Identify the choice that best completes the statement or answers the question

1. Cloud computing has been exerting a strong gravitational pull all of its own—one that has been attracting a mass of money. List Down Some of the Big Players in Cloud Computing. (1)
2. At its simplest, cloud computing is the dynamic delivery of information technology resources and capabilities as a service over the Internet. Cloud computing is a style of computing in which dynamically scalable and often virtualized resources are provided as a service over the Internet. List down some of the attributes of the Cloud Computing and also list down some of the benefits of cloud computing. (2)
3. Describe different categories of system resources that are often tracked by capacity planners. (2)
4. Cloud computing refers to applications and services that run on a distributed network using virtualized resources and accessed by common Internet protocols and networking standards. Describe what the difference between the physical network and cloud computing is. (2)
5. Capacities planning for cloud computing sounds like an oxymoron. Define capacity planning in context to cloud computing. (2)
6. Capacity and performance are two different system attributes. Differentiate between these two attributes. (1)
7. Capacity Planning is an iterative process with 5 different steps. List atleast 4 different steps. (1)
8. What are clients? Clients generally fall into three categories. One of them is thin clients. List and explain the other two. (2)
9. Grid computing is often confused with cloud computing but they are quite different. Describe what you understand by the term grid computing? (1)
10. Whether or not you or your organization should use cloud computing will depend on a number of factors. List three factors that will let organization to move to cloud computing. (1.5)

11. A cloud environment has to have a built-in service that sends a bill to the customer. And, to send that bill, usage has to be measured. Explain how does usage is measured in cloud computing. (1)
12. Explain how are cloud providers different from traditional IT service providers? (1.5)
13. There are two distinct modes of Software as a Service; they are **Simple Multi-Tenancy** and **Fine Grain- Tenancy**. Explain these modes. (2)
14. Cloud services will have a major impact on your organization in ways that may not be obvious. The cloud impacts the whole company, not just the IT department. List down some of the organizational issues relating to cloud computing. (2)
15. Cloud services-based resources should be no different from the resources in your own environment, except for the fact that they physically reside remotely. So, ideally the cloud service customer will have a complete view of the resources they use today or may want to use in the future. Although this sounds straightforward, achieving it isn't that easy. Explain the three aspects of cloud resource management that companies may apply. (1.5)
16. In today's data centres, virtualization is an important element of IT strategy. Explain what visualization is and what the advantages of it are. (2)
17. Examining your server under load for system metrics isn't going to give you enough information to do meaningful capacity planning. You need to know what happens to a system when the increases. Write down what questions do load testing seeks. (2)
18. If any cloud-computing system resources are difficult to plan for, it is network capacity. There are three aspects to assessing network capacity. What are they? (2)
19. Differentiate between vertical and horizontal scaling. (2)
20. Windows Azure is a cloud based operating system. Mention three features of Microsoft Windows Azure. (1.5)
21. Security is the number one issue when it comes to cloud computing and that only makes sense. Since a third party stores your data, you don't know what's going on with it. It's easy to worry about the security risks of a cloud solution, but let's not overlook the inherent security benefits, as well. List and explain at least three types of security issues. (1)
22. List two operational and two economics benefits of cloud computing? (2)
23. Describe what the relationship between workload and TPM is by using one example of an IaaS provider. (1)
24. Why most of the companies create pods among their Datacenters. List some of the advantages of the pods and silo. (2)
25. Differentiate between Shrink – wrapped software, Hybrid Model, and Licencing. (1)

26. Anyone relying on computing resources in general and cloud computing in particular has these three concerns. Describe these three concerns. (1.5)
27. Probably nothing is more important to enterprises than the reliability, availability, and security of their systems. With that in mind, some make a career of peddling FUDD, especially as these relate to reliability and security, usually in defence of the status quo. Explain what you understand by FUDD. (0.5)
28. A DoS attack can be perpetrated in a number of ways. List down five basic types of attack that exists. Also list what are intention of DoS that has execution of Malware. (2)
29. SysTrust certification was developed jointly by the American Institute of Certified Public Accountants (AICPA) and the Canadian Institute of Chartered Accountants (CICA). Describe the purpose of the carrying out a SysTrust certification by the Cloud Vendors. (1)
30. There are many efforts centered around the development of both open and proprietary APIs which seek to enable things such as management, security, and interoperability for cloud. What does these efforts include. (1)
31. A service-oriented architecture (SOA) is inextricably linked to cloud computing. This flexible set of design principles is used during the phases of systems development and integration. Draw the architecture of SOA. (1)
32. Describe the cost for renting Google computing resources in a table form. (1)
33. Google also announced the free availability of the Google Earth API and browser plug-in, which allows Web developers to quickly and easily turn their Web pages into 3D map applications. What are the key features of it? (1)
34. Google Apps Script is a powerful way to automate business processes ranging from expense approvals to time-sheet tracking to ticket management and order fulfilment. Scripts are an efficient way for customers to add custom functionality beyond Google's expanding suite of Web-based applications. What are some of the offerings of Google Apps Script? (1)
35. IBM was relatively early in recognizing the advantages of cloud computing for development. IBM has offered a *private* cloud solution for development and test since June 2009, and now offers development and test services in three delivery models. What are these three models? (1)
36. IBM's cloud computing competency centers are designed to showcase IBM cloud computing infrastructures, applications, and services capabilities through specific competency and training solutions, as well as offer additional services to clients. What are the points that IBM stresses about the IBM cloud solutions. (1)

Section C: Essay Writing (30)

(Answer only 3 questions)

1. Discuss the importance of multi-tenancy for clouds, and the various ways of achieving it in the layers from Virtualization to Middleware. Discuss security and performance concerns, discuss billing/metering. Describe at least one layer in detail (for instance, discuss implementation for database)
2. What are the approaches to adopt the cloud computing concepts?
 - a. Discuss the approaches considering cultural and organizational aspects?
 - b. What are the potential integration points of cloud processes into an enterprise?
 - c. Why are they important?
3. Storage
 - a. What are the requirements/goals for consumers and for providers of storage services in a cloud environment?
 - b. What are the benefits of storage virtualization and what are the pre-requisites of using storage virtualization?
 - c. Describe the main functional areas needed for storage management in cloud environments.
4. Security
 - a. Pick a company that offers well-defined services over the Internet
 - b. Pick at most 3 services and perform a security risk analysis of implementing these services on an infrastructure cloud (e.g. Amazon)
 - c. Pick one service and elaborate the security objectives, risks and whether you would accept (why?) or mitigate (how?) those risks
 - d. Deciding whether you go cloud or not at a certain point in time..