

Preview Test: INFS3208 Semester Two End-of-semester Examination 2021

Test Information

Description Undertaking this online examination deems your commitment to UQ's academic integrity pledge as summarised in the following declaration:
"I certify that I have completed this examination in an honest, fair and trustworthy manner, that my submitted answers are entirely my own work, and that I have neither given nor received any unauthorised assistance on this examination".

Instructions You need to answer all of the questions in the Blackboard Test.

Timed Test This test has a time limit of 2 hours and 10 minutes. This test will save and be submitted automatically when the time expires.
Warnings appear when **half the time, 5 minutes, 1 minute, and 30 seconds** remain.
[The timer does not appear when previewing this test]

Multiple Attempts Not allowed. This test can only be taken once.

Force Completion This test can be saved and resumed at any point until the time has expired. The timer will continue to run if you leave the test.
Your answers are saved automatically.

QUESTION 1

1 points

Save Answer

What are the business drivers for Cloud Computing?

- ☐ Capacity planning
- ☐ Cost reduction
- ☐ Organisational agility
- ☐ All of the above

QUESTION 2

1 points

Save Answer

Which of the following is NOT regarded as an IT resource in Cloud Computing?

- ☐ Virtual machines on physical servers
- ☐ Software program
- ☐ Storage services (e.g. Dropbox/OneDrive/iCloud)
- ☐ Portable USB Flash Drives

QUESTION 3**1 points**[Save Answer](#)

What are the cloud delivery models for Virtual Machine and Google App Engine, respectively?

- ☐ SaaS and PaaS
 - ☐ IaaS and PaaS
 - ☐ IaaS and SaaS
 - ☐ None of the above
-

QUESTION 4**1 points**[Save Answer](#)

What is a public cloud?

- ☐ A publicly accessible and metered cloud environment owned by a third-party cloud provider.
 - ☐ A computing service that can only be accessed from a publicly shared computer.
 - ☐ A publically accessible computing environment free of charge.
 - ☐ The cloud infrastructure that is provisioned for exclusive use by a single organization comprising multiple consumers (e.g., business units)
-

QUESTION 5**1 points**[Save Answer](#)

Which of the following software does allow you to run multiple virtual machines on one physical server machine?

- ☐ Host operation system
 - ☐ Guest operating system
 - ☐ Virtual machine management or hypervisor
 - ☐ None of the above
-

QUESTION 6**1 points**[Save Answer](#)

Which of the following statements about Virtual Private Cloud (VPC) is NOT correct?

- ☐ A virtual private cloud (VPC) is a virtualized private cloud within a public cloud (GCP, AWS) for an organization.
 - ☐ To access a VPC network, Virtual Private Network can be used to build an encrypted tunnel between on-premises IT resources and the VPC.
 - ☐ VPC is a global resource in GCP, while VPC is a regional one in AWS.
 - ☐ Every user can access an established VPC without authentication.
-

QUESTION 7**1 points**[Save Answer](#)

Which of the following statements about the VPC's firewall is NOT correct?

- ☐ In GCP, VPC routes define paths for packets leaving instances to a destination.
 - ☐ Firewall rules apply to both outgoing (egress) and incoming (ingress) traffic in the network.
 - ☐ In GCP, every default VPC network has implied firewall rules and you could delete them.
 - ☐ None of the above.
-

QUESTION 8**1 points**[Save Answer](#)

A docker registry is a stateless, highly scalable server side application that stores and distributes _____

- ☐ docker images
 - ☐ docker commands
 - ☐ docker files
 - ☐ All of the above
-

QUESTION 9**1 points**[Save Answer](#)

Which of the following docker command is to delete an existing image?

- ☐ docker rmi
 - ☐ docker kill
 - ☐ docker rm
 - ☐ docker pause
-

QUESTION 10**1 points**[Save Answer](#)

Which of the following commands can be used to replace docker-compose up?

- ☐ docker-compose build and docker-compose run
 - ☐ docker-compose build and docker-compose start
 - ☐ docker-compose start and docker-compose run
 - ☐ None of the above
-

QUESTION 11**1 points**[Save Answer](#)

Decoupling MySQL, Redis, Nginx, and PHP services into multiple containers makes it easier to scale horizontally and reuse the containers.

- ☐ True
 - ☐ False
-

QUESTION 12**1 points**[Save Answer](#)

Which of the following commands can be used to scale down a service running with 6 containers to 3 containers?

- ☐ docker service scale down 3
 - ☐ docker services scale=3
 - ☐ docker service scale =3
-

QUESTION 13**1 points**[Save Answer](#)

Which of the following must all the communications between components go through?

- ☐ Etcd
 - ☐ The controller manager
 - ☐ The API server
 - ☐ The scheduler
-

QUESTION 14**1 points**[Save Answer](#)

Which of the following is NOT a NoSQL database?

- ☐ MySQL
 - ☐ Redis
 - ☐ MongoDB
 - ☐ Cassandra
-

QUESTION 15**1 points**[Save Answer](#)

_____ stores are used to store information about networks, such as social connections.

- ☐ Key-value
 - ☐ Wide-column
 - ☐ Document
 - ☐ Graph
-

QUESTION 16**1 points**[Save Answer](#)

Which of the following belongs to Cluster File System?

- ☐ Sun Network File System (NFS)
 - ☐ Hadoop Distributed File System (HDFS)
 - ☐ Common Internet File System (CIFS)
 - ☐ Google's Bigtable
-

QUESTION 17**1 points**[Save Answer](#)

Which of the following is NOT a feature of Spark?

- ☐ Supports in-memory computation
 - ☐ Fault-tolerance
 - ☐ It does not support interactive process.
 - ☐ Compatible with other file storage system
-

QUESTION 18**1 points**[Save Answer](#)

Which of the following is true for Spark SQL?

- ☐ It is the kernel of Spark.
 - ☐ Provides an execution platform for all the Spark applications
 - ☐ It enables users to run SQL / HQL queries on the top of Spark.
 - ☐ Enables powerful interactive and data analytics application across live streaming data
-

QUESTION 19**1 points**[Save Answer](#)

What are the advantages of 3x replication schema in Hadoop?

- ☐ Fault tolerance
 - ☐ High availability
 - ☐ Reliability
 - ☐ All of the above
-

QUESTION 20

1 points

Save Answer

Which of the following statement about Asymmetric Encryption is correct?

- ☐ Asymmetric encryption relies on the use of two same keys, namely secret keys.
- ☐ The sender only knows its private key.
- ☐ The receiver must know the sender's private key.
- ☐ None of the above.

QUESTION 21

3 points

Save Answer

What are Docker Images, Docker Containers, and Docker Registries? Please give brief descriptions of these concepts. (3 marks)

For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

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P0 WORDS POWERED BY TINY

QUESTION 22

4 points

Save Answer

Please briefly describe the workflow of Kubernetes. (4 marks)

For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

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P0 WORDS POWERED BY TINY

QUESTION 23

4 points

Save Answer

Please briefly describe how Spark works? (4 marks)
For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

A screenshot of the TinyMCE editor toolbar. The toolbar is organized into several sections. The first section contains text formatting icons: Bold (B), Italic (I), Underline (U), and Strikethrough (ABC). The second section contains paragraph formatting options: a 'Paragraph' dropdown menu and a font family dropdown showing 'Open Sans, sa...'. The third section contains text size and color options: a '10pt' size dropdown, a text color icon, and a background color icon. The fourth section contains alignment and list options: a bulleted list icon, a numbered list icon, a text alignment dropdown (currently showing 'A'), a link icon, and an unlink icon. The fifth section contains undo and redo icons, followed by a 'P' button for paragraph. The sixth section contains a '0 WORDS' counter and the text 'POWERED BY TINY'.

QUESTION 24

5 points

Save Answer

Please briefly describe each step in the READ operation in Google File System (GFS). (5 marks)

For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

[illegible]

QUESTION 25

2 points

Save Answer

What is the lazy evaluation mechanism in Apache Spark? (2 marks)

For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

A screenshot of the TinyMCE editor toolbar. The toolbar is divided into several sections. The first section contains text formatting icons: Bold (B), Italic (I), Underline (U), and Strikethrough (ABC). The second section contains paragraph formatting icons: Paragraph (down arrow), Open Sans, sans-serif (down arrow), 10pt (down arrow), Bulleted List (three horizontal lines with dots), Numbered List (three horizontal lines with numbers 1, 2, 3), Text Color (A with a color bar), Background Color (pencil icon), and Subscript (I_x). The third section contains undo and redo icons (curved arrows), followed by four alignment icons (left, center, right, justified), and two more icons (a list icon and a subscript icon). The bottom status bar shows 'P' on the left and '0 WORDS POWERED BY TINY' on the right.

QUESTION 26

4 points

Save Answer

What are the CAP theorem and BASE properties? (4 marks)

For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

A screenshot of the TinyMCE editor toolbar. The toolbar is organized into several sections. The first section contains text formatting icons: bold (B), italic (I), underline (U), and strikethrough (ABC). The second section contains paragraph formatting options: a dropdown menu currently showing 'Paragraph' and another dropdown showing 'Open Sans, sa...'. The third section contains font size (10pt) and a dropdown arrow. The fourth section contains list and alignment icons: bulleted list, numbered list, indent, outdent, text color (A), background color (brush), and subscript/superscript (T_x). The fifth section contains undo, redo, and alignment icons: left align, center align, right align, and justified align. The sixth section contains link and unlink icons. The bottom status bar shows 'P' on the left and '0 WORDS POWERED BY TINY' on the right.

QUESTION 27

3 points

Save Answer

Please briefly describe how a digital signature works when sending a message from a sender to a receiver. (3 marks)

For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

A screenshot of the TinyMCE editor toolbar. The toolbar is organized into several sections. The first section contains text formatting icons: Bold (B), Italic (I), Underline (U), and Strikethrough (ABC). The second section contains paragraph formatting options: a 'Paragraph' dropdown menu and an 'Open Sans, sans-serif' font family dropdown. The third section contains text size and style options: a '10pt' size dropdown, a bulleted list icon, a numbered list icon, a text color 'A' dropdown, a background color eraser icon, and a subscript 'I_x' icon. The fourth section contains editing and alignment tools: a cut icon, a copy icon, a paste icon, a search icon, an undo icon, a redo icon, four alignment icons (left, center, right, justified), a decrease indent icon, an increase indent icon, a square icon, a superscript 'x²' icon, and a subscript 'x₂' icon. At the bottom of the toolbar, it shows 'P' for paragraph, '0 WORDS', and 'POWERED BY TINY'.

QUESTION 28

5 points

Save Answer

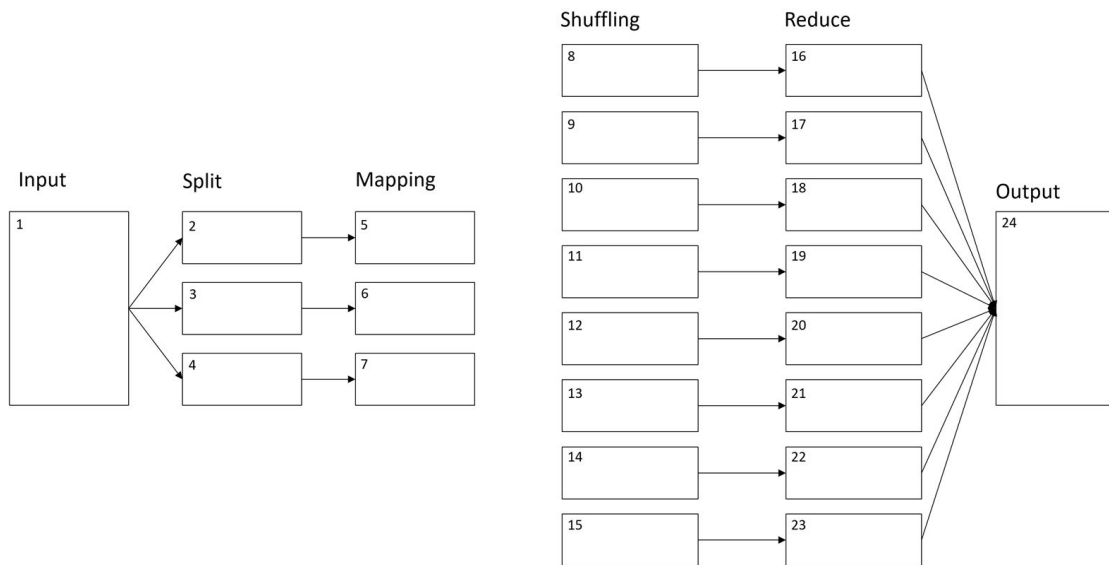
Given the following text input, please use the below Map-Reduce framework to perform word count (case insensitive). Note that a combiner should be in use if necessary. Please write down the answers according to the box numbers below. (5 marks)

Text Input:

Saturn is a planet.

Planet Earth is a planet.

Pluto is not a planet anymore.



Answer sample:

1: (Input).

Saturn is a planet

Planet Earth is a planet

Pluto is not a planet anymore

Please write the answers in the below blanks:

Split			Mapping		
2:			5:		
3:			6:		
4:			7:		
Shuffling			Reduce		
8:			16:		
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10:			18:		
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13:			21:		
14:			22:		
15:			23:		

QUESTION 29 0 points [Save Answer](#)

Save Answer

Please use this space to specify any assumptions you have made in completing the exam and which questions those assumptions relate to. You may also include queries you may have made with respect to a particular question, should you have been able to 'raise your hand' in an examination room.

For the toolbar, press ALT+F10 (PC) or ALT+FN+F10 (Mac).

A screenshot of the TinyMCE editor toolbar. The toolbar is organized into several sections. The first section contains text formatting icons: Bold (B), Italic (I), Underline (U), and Strikethrough (ABC). The second section contains paragraph formatting options: Paragraph (selected), Open Sans, sa... (font face), and a dropdown arrow. The third section contains text color and background color options, represented by 'A' and a paint bucket icon. The fourth section contains text alignment options: Left, Center, Right, and Justify. The fifth section contains list and link options: Bulleted list, Numbered list, Link, and Unlink. The sixth section contains undo and redo icons. The seventh section contains indent and outdent icons. The eighth section contains a table icon. The ninth section contains a link icon. The tenth section contains a link icon. The eleventh section contains a link icon. The twelfth section contains a link icon. The thirteenth section contains a link icon. 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The ninety-eighth section contains a link icon. The ninety-ninth section contains a link icon. The hundredth section contains a link icon.