



## HIGHER EDUCATION PROGRAMMES

Academic Year 2024:	January - June
Summative Assessment 2:	Database Programming 2 (DB Technologies & SQL)
NQF Level, Credit:	6, 20
Weighting:	10%
Assessment Type:	Research Essay
Educator:	Ralph Mavhunga
Examiner:	Luvuyo Ngcobo
Due Date:	10 June 2024
Total:	20 Marks

A **Copyleaks Report** will be issued via ColCampus once the assignment is submitted. Please ensure that you follow the correct steps when uploading your assignment to ensure that the Copyleaks Report is correctly issued. If the incorrect document is uploaded, if no Copyleaks Report is issued, or if the Copyleaks Report indicates that a 30% similarity rating has been exceeded, a mark of zero (0) will be awarded. Where a Copyleaks Cheat Detection Report is issued, your submission will automatically be treated as if you received a similarity rating in excess of 30% and a mark of zero (0) will be awarded.

## Instructions

1. Summative Assessment 2 (SA 2) must be handed in online before or on the day of the Summative Assessment 1 (SA 1) sitting.
2. The essay must be a minimum of 800 (eight hundred) words and should not exceed 950 (nine hundred and fifty) words.
3. The essay structure must be as follows:
  - Cover Page:
    - Name
    - Surname
    - Student Number
    - Name of your Support Centre (e.g, Boston, Braamfontein)
  - Introduction: Tells the reader what the essay is about.
  - Body / Main Content: Is based on research and relates to the essay question or topic that has been set.
  - Conclusion: Is a summary of what has been covered in the essay, it may also include suggestions / recommendations.
  - Reference list: (not included in the word count): the Harvard Referencing Method must be adhered to with regards to in-text citations and the reference list. Please make sure you have read and adhere to the *NWU Referencing Guide*, available in the HE Library module on Col Campus, as well as *The Beginners Guide to Plagiarism*, available in the HE Student Information module, also on Col Campus.
4. The essay must be typed, using the following type settings only:
  - Font: Arial
  - Font Size: 12
  - Line Spacing: 1.5

### 5. The following must be adhered to:

- ***You have been provided with two (2) academic sources (see below), these sources are compulsory and must be consulted and referenced when answering the research question.***
- ***It is imperative to note that the compulsory sources must be accessed using the Library module on Col Campus.***

### ***Compulsory sources to peruse:***

- Zhang, D., 2018, October. Big data security and privacy protection. In 8th international conference on management and computer science (ICMCS 2018) (pp. 275-278). Atlantis Press. Retrieved from: <https://www.atlantis-press.com/proceedings/icmcs-18/25904185> [Accessed on 31 October 2023]
- Benjelloun, F.Z. and Lahcen, A.A., 2019. Big data security: challenges, recommendations and solutions. In Web Services: Concepts, Methodologies, Tools, and Applications (pp. 25-38). IGI Global. Retrieved from:

[https://www.researchgate.net/profile/Ayoub-Ait-Lahcen/publication/278962714\\_Big\\_Data\\_Security\\_Challenges\\_Recommendations\\_and\\_Solutions/links/577bfc8808ae213761cab725/Big-Data-Security-Challenges-Recommendations-and-Solutions.pdf](https://www.researchgate.net/profile/Ayoub-Ait-Lahcen/publication/278962714_Big_Data_Security_Challenges_Recommendations_and_Solutions/links/577bfc8808ae213761cab725/Big-Data-Security-Challenges-Recommendations-and-Solutions.pdf) [Accessed on 31 October 2023]

- Bao, R., Chen, Z. and Obaidat, M.S., 2018. Challenges and techniques in Big data security and privacy: A review. *Security and Privacy*, 1(4), p.e13. Retrieved from: <https://onlinelibrary.wiley.com/doi/epdf/10.1002/spy2.13> [Accessed on 31 October 2023]

6. You must make use of the Harvard Method of Referencing. Refer to the examples of referencing below:

**Book, single author:**

Holt, D.H. 2017. *Management principles and practices*. Sydney: Prentice-Hall.

**Book, 2 or 3 authors:**

McCarthy, E.J., William, D.P. & Pascale, G.Q. 2017. *Basic marketing*, Cape Town: Juta.

**Book, more than 3 authors:**

Bond, W.R., Smith, J.T., Brown, K.L. & George, M. 2016. *Management of small firms*, Sydney: McGraw-Hill.

**Book, no author:**

Anon. 2009. *A history of Greece 1994-now*. Sydney: Irwin.

**eBook:**

Harris, C.A. 1917. *How to write music: musical orthography*, edited by M. Randall. New York, NY: H. W. Grey. <http://gutenberg.org/files/37281/37281-h/37281-h.htm>. Date of access: 31 August 2017.

**Academic Journal article with one author:**

Allan, J. 2017. Nurturing supportive learning environment in higher education through the teaching of study skills: to embed or not to embed? *International Journal of Teaching and Learning in Higher Education*, 19(2):64-76.

**Academic Journal with 2 or more authors:**

Glatt, M.M., Grindstone, C.H & Hult, C.J. 2019. The geographic expansion of Mexican immigration in the United States and its implications for local law enforcement. *Law Enforcement Executive Forum Journal*, 8(1):73-82.

**Webpage, no author:**

(use first few words of the page title) Improve indigenous housing now, government told. 2007. Available from: <<http://www.architecture.com.au/i-cms?page=10220>>. Date of Access, 8 February 2016.

**Website:**

Australian Securities Exchange. 2019. Market Information. Available from: <[http://www.asx.com.au/professionals/market\\_information/index.htm](http://www.asx.com.au/professionals/market_information/index.htm)> Accessed on 5 July 2019.

**Web based image / table / figure:**

The Lunar Interior. 2000. Available from: <http://www.planetscapes.com/solar/browse/moon/moonint.jpg> 2 Accessed on 8 November 2016.

**Blog:**

Newton, A. 2007. Newcastle toolkit. 16 January 2007. Angela Newton: Blog. Available from: <<https://elgg.leeds.ac.uk/libajn/weblog/>> Accessed on 23 February 2014.

**Facebook and Twitter:**

Smith, P. 2012. Social networking group, (Facebook), 6 October. Available from: <http://facebook.com> Accessed on 29 October 2012.

**Newspaper, print:**

Wolhuter, T. 2011. How to read food labels. *Star*. 26, 2 Mar 2011.

**Newspaper, electronic database:**

Hans, B. 2011. Cosatu slams Swazi loan. *The mercury*, 15 Aug. <http://www.iol.co.za/mercury/cosatu-slams-swazi-loan-1.1117816> Date of access: 1 Sep. 2012.

7. Plagiarism occurs when a writer duplicates another writer's language or ideas, and then calls the work his or her own. Simply put, plagiarism is theft. This includes the 'copy and paste' of work from textbooks, study guides, journal articles. The Plagiarism Declaration, included in this brief, must be signed and attached to the front of your essay. Refer to the Plagiarism Information Sheet in your Course Outline for further information.

**8. Academic sources:**

Not all sources can be classified as an academic source. To judge whether a source is an academic source, take the following criteria into account:

- The author should be identifiable
- The source should be published by a credible publisher (In an Academic Textbook or Academic Journal)
- A list of references should be provided

Wikipedia **is not** a credible academic source. There is no one author identifiable, and editing an article on this site is very easy. Also, blog posts often provide valuable information, but this is not academically sound.

9. To obtain maximum results, please consult the rubric in this brief to ensure that you adhere to and meet all the criteria.

## **The context for the assignment:**

Big data management introduces significant information security concerns for many organisations across various sectors. These concerns encompass a range of challenges spanning big data modelling, secure storage, retrieval while maintaining data integrity, secure analysis methods, and safeguarding sensitive data during visualisation. Nevertheless, effectively handling of these security challenges necessitates a harmonious alignment of technological resources, skilled personnel, and robust processes to enable secure big data management within any organisational context. The overarching objective is to harness insights and knowledge from vast data sets to inform decision-making, all while addressing the intricate interplay of security and privacy.

### **Question 1**

**(20 Marks)**

**Conduct research focusing on the security implications of big data management, covering the following aspects:**

- i. What factors have contributed to the emergence of big data technologies in light of data security concerns?
- ii. Analyse the pivotal role and significance of technology, personnel, and processes in ensuring secure big data management.
- iii. Explore the challenges and prospects arising from the shift towards big data within the context of data security.

### ***Compulsory sources to peruse:***

- Zhang, D., 2018, October. Big data security and privacy protection. In 8th international conference on management and computer science (ICMCS 2018) (pp. 275-278). Atlantis Press. Retrieved from: <https://www.atlantis-press.com/proceedings/icmcs-18/25904185> [Accessed on 31 October 2023]
- Benjelloun, F.Z. and Lahcen, A.A., 2019. Big data security: challenges, recommendations and solutions. In Web Services: Concepts, Methodologies, Tools, and Applications (pp. 25-38). IGI Global. Retrieved from: [https://www.researchgate.net/profile/Ayoub-Ait-Lahcen/publication/278962714\\_Big\\_Data\\_Security\\_Challenges\\_Recommendations\\_and\\_Solutions/links/577bfc8808ae213761cab725/Big-Data-Security-Challenges-Recommendations-and-Solutions.pdf](https://www.researchgate.net/profile/Ayoub-Ait-Lahcen/publication/278962714_Big_Data_Security_Challenges_Recommendations_and_Solutions/links/577bfc8808ae213761cab725/Big-Data-Security-Challenges-Recommendations-and-Solutions.pdf) [Accessed on 31 October 2023]
- Bao, R., Chen, Z. and Obaidat, M.S., 2018. Challenges and techniques in Big data security and privacy: A review. Security and Privacy, 1(4), p.e13. Retrieved from: <https://onlinelibrary.wiley.com/doi/epdf/10.1002/spy2.13> [Accessed on 31 October 2023]

## HINTS

- Make effective use of terminology to present your content.
- ***Further to the sources provided in the compulsory sources section***, explore and use other relevant literature. This is evidence that you did some research of your own.
- Use in-text citations to acknowledge all your reference sources.
- Include a complete list of references in the References / Bibliography.

**The following Learning Outcomes are assessed in this assessment:**

- Highlight and discuss modern trends in data storage, databases and higher levels of aggregation
- Elaborate on the interplay between key components of IT systems
- Reflect on the management and security issues and concerns for organisations which arise from IT trends
- Discuss the future of data storage and governance

Criteria		Suggested Mark Allocation				Total
i.	Understand the theoretical foundations of big data technologies.	1) The student demonstrates a detailed understanding of big data technologies.✓✓✓✓  The student shows awareness of big data technologies and the components that realise it in business organisations ✓✓✓✓	The student satisfies all three (3) of the given criteria and demonstrates a clear understanding of the criteria mentioned.	The student satisfies two (2) of the given criteria well.	The student satisfies one (1) of the given criteria, giving inadequate detail.	The student shows some awareness of the topic but needs to meet or address the given criteria.
ii.	Summarise the value and role played by each component in Big Data	2) The student gives a clear summary of the emergence of big data✓✓ and how business and data management are affected✓✓				
iii.	Appraise the impact of Big Data developments on the future of business operations and data governance.	3) The student provides a justified/balanced evaluation of the impact made by big data technologies, i.e., the student makes reasonable conclusions founded on the potential benefits and pitfalls of using Big Data✓✓✓✓				
		10 - 16	7-9	5-6	2-1	0
Bibliography and referencing		Evidence that multiple relevant and <b>compulsory sources</b> were consulted✓  Correct Harvard referencing for all sources. ✓	<b>At least three (3) sources (relevant and compulsory sources)</b> were consulted.✓	No evidence of research or acknowledgment of sources (In-text citations and Bibliography missing)		



	Appropriate in-text citations✓ A complete Bibliography list✓	Correct Harvard referencing for some sources. ✓  Some In-text citations and a Bibliography section present✓ (possibly incomplete)		
	<b>4</b>	<b>3 -1</b>	<b>0</b>	<b>4</b>
<b>Total</b>				<b>20</b>