HIGHER EDUCATION PROGRAMMES

Academic Year 2025:	January - June
Summative Assessment 2:	Systems Analysis and Design 3 (HSAD300-1)
NQF Level, Credit:	6, 20
Weighting:	10%
Assessment Type:	Research Essay
Educator:	Luvuyo Ngcobo
Examiner:	Ralph Mavhunga
Due Date	2 June 2025
Total	20 Marks

Note 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, or if no Copyleaks Report is issued, or if the Copyleaks Report indicates that a 30% similarity/plagiarism score has been exceeded, a mark of zero (0) will be awarded.

The following Learning Outcomes are assessed in this assessment:

- Gain a broad understanding of data-driven architecture
- Appreciate the benefits as well as the limitations of data-driven architecture

- Analyse the characteristics that influence the usage intention of data-driven architecture

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 600 (six hundred) words, and should not exceed 750 (seven hundred and fifty) words.

3. The essay structure must be as follows:
   - Cover Page:
     - Name
     - Surname
     - Student Number
     - Name of your Support Centre (i.e. 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 ColCampus, as well as *The Beginners Guide to Plagiarism*, available in the HE Student Information module, also on ColCampus.

4. The essay must be typed, using the following type settings only:
   - Font: Arial
   - Font Size: 12
   - Line Spacing: 1.5

- **The following must be adhered to:**
- ***You have been provided with two (2) academic sources (see below), these sources are <u>compulsory</u> 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 ColCampus.***

Compulsory sources to peruse:

- Simmhan, Y., Ravindra, P., Chaturvedi, S., Hegde, M., and Ballamajalu, R. (2018). *"Towards a data-driven IoT software architecture for smart city utilities".* Retrieved from https://onlinelibrary.wiley.com/doi/abs/10.1002/spe.2580 [Accessed on 03 September 2024] (**Google Scholar**)

- Biswas, S., and Sen, J. (2017). *"A Proposed Architecture for Big Data Driven Supply Chain Analytics".* Retrieved from https://arxiv.org/pdf/1705.04958 [Accessed on 03 September 2024] (**Google Scholar)**

5. You must make use of the Harvard Method of Referencing. Refer to the <u>examples</u> of referencing below:

Book, single author:

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

Book, 2 or 3 authors:

McCarthey, 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://gutenbert.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> 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.

6. 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.

7. ***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. No author is identifiable, and editing an article on this site is very easy. Also, blog posts often provide valuable information, which is not academically sound.

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

Question 1 **(20 Marks)**

You have been hired as a software architect to lead the transition to a data-driven architecture for a multinational corporation. Critically analyse the architectural decisions required to design and implement a scalable, secure, and efficient data-driven system.

Compulsory sources to peruse:

- Simmhan, Y., Ravindra, P., Chaturvedi, S., Hegde, M., and Ballamajalu, R. (2018). *"Towards a data-driven IoT software architecture for smart city utilities".* Retrieved from https://onlinelibrary.wiley.com/doi/abs/10.1002/spe.2580 [Accessed on 03 September 2024] (**Google Scholar**)

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Assignment content	Suggested mark allocation				Total
	15 - 18	**14 - 10**	**9 - 5**	**5 - 0**	
Critically analyse the architectural decisions required to design and implement a scalable, secure, and efficient data-driven system.	The topic was understood comprehensively. Responses relevant & accurate to the topic. Presents well-adjusted, significant, and valid information on: Two-sided argument: Critically analyse the architectural decisions required to design and implement a scalable, secure, and efficient data-driven system - max 17 marks	Sufficient understanding of the topic. Responses are relevant to the topic. Presents valid information that outlines: A fair two-sided argument: Critically analyse the architectural decisions required to design and implement a scalable, secure, and efficient data-driven system – max 14 marks	Limited understanding of the topic. Poor two-sided argument: Critically analyse the architectural decisions required to design and implement a scalable, secure, and efficient data-driven system – max 9 marks	The topic is not understood at all. Responses are not aligned and do not address the topic. The content is unclear, inaccurate, and/or incomplete. Poor two-sided argument: Critically analyse the architectural decisions required to design and implement a scalable, secure, and efficient data-driven system 4 marks	
Bibliography and Referencing	Evidence that multiple relevant and compulsory sources were consulted✓✓ Correct Harvard referencing for all sources. Appropriate in-text citations✓✓	At least two (2) sources (relevant and compulsory sources) were consulted, and Harvard referencing was correct for some of the sources. ✓	There is no evidence of research or acknowledgement of sources (In-text citations and Bibliography missing)		
	3	1	0		/20