

American International University-Bangladesh (AIUB)

**Department of Computer Science**

**Faculty of Science & Technology (FST)**

**Research Methodology**

**Assignment**

Submitted By

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| --- | --- | --- | --- | --- | --- |
| **Semester: Summer\_2023-2024 FINAL TERM** | | | | **Section:** | **Group No:** |
| SL | SN | Student Name | Student ID | Individual  Contribution (100%) | Total Marks: 40 |
| Earned Marks: |
| **A** |  |  |  |  |  |
| **B** |  |  |  |  |  |
| **C** |  |  |  |  |  |
| **D** |  |  |  |  |  |

Submission Date:

**The assignment will be Evaluated for the following Course Outcomes**

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| CO1: *Evaluate* all relevant resources for designing a computer science and engineering solution and determine the level of novelty of the research. | Total Marks (9) |
|  |
| **Problem Analysis and use of State-of-the-Art** **Resources:** Discuss the research problem background with best use of state‐of‐art literature, resources, and technologies to produce a significant result that is likely to have a major impact. | [3 Marks] **A: B: C: D:** |
| **Critical Reflection and Creativity in Research Objective:** Deep insight demonstrated and presented a creative solution to the real‐life problem. And Results are critically confronted with various existing literature | [3 Marks] **A: B: C: D:** |
| **Novelty and Contribution of the Research:** Elaborately discuss and identify the contribution of the research to the development of scientific concepts by recognizing the research gaps of existing research and developments. | [3 Marks] **A: B: C: D:** |

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| CO2: *Analyze* the collected data to provide valid solution of the research problem acknowledging the limitations. | Total Marks (9) |
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| **Data Analysis:** Elaborately discuss the research method, its appropriateness and details on data collection, analysis, and synthesis for proposing valid solution to the research problem. | [3 Marks]  **A: B: C: D:** |
| **Solution and Validation:** Elaborately discuss the solution of the research problem by establish a direct connection between proposed solutions with the research objective based on the collected research data. | [3 Marks]  **A: B: C: D:** |
| **Limitation and Scope of Future Studies:** Elaborately discuss abstract and concluding remarks of the research with its limitations and scope of future studies. | [3 Marks]  **A: B:  C: D:** |

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| CO3: Determine and Demonstrate professional codes of ethics and standard in conducting research considering public safety; the impacts of engineering activity; economic, social, cultural, environmental and sustainability. | Total Marks (9) |
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| **Free of Plagiarism, Data Falsification Citations and References:** Submit plagiarism free research paper (similarity index is <10%). In-text citations and reference list citations were complete and properly formatted in APA or any other standard style. The Research data is not fabricated or altered intentionally to fit into the predetermined research findings. Materials are properly cited and referenced if they are taken from other sources. And not attributed to a source from which it has not been obtained *(i.e., false citation)* | [3 Marks]  **A: B: C: D:** |
| **Professional codes of ethics and standard:** The research elaborately demonstrates professional codes of ethics and standard in conducting research considering public safety; the impacts of engineering activity; economic, social, cultural, environmental and sustainability. | [3 Marks]  **A: B: C: D:** |
| **Formatting and Submission:** Submitted in due time, the report is complete and there are no errors in spelling, format, and grammar. Consistently  presents a logical and effective organization. | [3 Marks]  **A: B: C: D:** |

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| CO4: *Defend* the research solutions based on complex engineering activities by delivering an effective presentation to the audience. | Total Marks (9) |
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| **Presentation delivery (eye contact and body language):** Keeps eye contact with audience all the time, use natural gestures and movements, looks confident. | [3 Marks]  **A: B: C: D:** |
| **Enthusiasm/Audience Awareness:** Demonstrate strong enthusiasm about the topic, significantly increases audience understanding and knowledge of the topic, convinces an audience to recognize the validity and importance of the subject. | [3 Marks]  **A: B: C: D:** |
| **Creativity and Use of Media:** The presentation was creative in design and effectively use multimedia. | [3 Marks]  **A: B: C: D:** |

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| Viva/Defense | Total Marks (4) |
| Defend the research in performance in the question/answer session. | **A: B: C: D:** |

Write Your Manuscript Title Here

Author’s Name  
Department of Computer Science  
American International University – Bangladesh  
author’s email address

**Abstract**

1. Your article must include an abstract, consisting of **100-150 words**, which provides readers with an overview of the content of your article.
2. It is important that your abstract clearly states the purpose of your article, data analyzing methods, and summarizes the research finding/content with its usefulness to various communities (e.g., you may write: this paper/article discusses/investigates……using SLR/Interview/Survey. The primary findings are……which would be helpful for…. OR the purpose of this research….)

**Keywords:** Word One, Word Two, Word Three

1. Please include a list of 5-8 keywords that figure prominently in your article. These words should include important vocabulary, names of people, and names of organizations, primarily.
2. These terms will be included to generate the index for the book. Please do not include words that are part of the book title or article title. Each word should be capitalized.

INTRODUCTION

* After reading the introduction, the reader should be aware of why this paper is worth reading.

**Problem Background**

1. Discuss the Background information of the research area and definition of key research terms.
2. Discuss why this problem is important to consider (e.g., if necessary, provide a story telling method with diagram and reference to realize the gravity to the research problem).
3. Add some references to support the texts. Also, be aware that how is this problem background related to your RQs?
4. Clearly state what is the real problem in the research domain at the end of this section (preferably with some bullet points).

**Related Studies**

1. Provide a discussion of the incorporated views of others (literature review) to support, refute, or demonstrate what others have done on the research topic and problem background. Hence, discuss the existing research within the problem area (other’s work). Who else has studied this problem? And what were their findings? How are these studies related to the problem domain?

To demonstrate the novelty of your research, discuss what is the research gap still existing in the research domain to consider?

**Research Objectives**

1. Discuss your research motivation/aims/objectives in relation to the identified research gap in related existing research/studies/solutions/etc.
2. Add 1-2 Research Question (RQs) to reflect your research objectives.

**Research Contributions**

Discuss how your research will contribute to the world/nation/community/society/individual and make a difference? Who is the audience of your research? What is your contribution to them? Who can use your proposed solutions and get benefits in which way?

Paper Organization plan (Optional part)

methodology

1. Elaborate the selection of your data collection/analysis method and tools that are completely and accurately relevant with diagrams, making analysis easy to reproduce.
2. Describe how the selected methods/tools are highly appropriate for this type of research and are directly linked to the purpose and research questions. Provide a description of why you select interview/survey/literature review instead of other available data collection techniques with some strong arguments.

**For Systematic Literature Review (SLR):**

1. What databases you have searched for to find relevant literature (e.g., publisher database)
2. What keywords you have used in your database searching with AND OR Boolean logic?
3. Where did you search in the literature (e.g. title, abstract, full text, etc.)
4. What is the time frame of your literature searching (e.g., last five/ten years)
5. Discuss How did you search literature using forward/backward search technique.
6. Discuss How did you search literature using author’s citation index techniques (e.g., DBLP, Google Scholar).
7. What was the number of literatures you’ve initially and finally selected?
8. What is the inclusion/exclusion criteria you’ve followed to finalize your literature selection?
9. How did you analyze the final selected literature to extract data to answer your research question?
10. How did you assess the quality of your literature selection? For quality assessment, following indicators may consider discussing in this section:

* Number of citations of the included literature
* Article published in ISI/Scopus indexed journal/conferences.
* Crossmatch with the findings from similar studies following SLR.

**For Interview/Survey:**

* Explain how did you generate interview/survey questions?
* What are the questions you’ve asked in interview/survey?
* How did you conduct an interview or survey?
* Who are the respondents to answer your questions?
* What is the total number of respondents?
* How did you select them?
* How did you analyze the data to present your findings?

results and analysis

**Research Data/Results**

1. Discuss the results of your research based on the data you have collected from SLR/Interview/Survey to answer your research question/research objective.

**Analysis and Discussion**

1. Answer your research questions or discuss your proposed solutions based on your research data. Here, you need to establish a direct connection between your proposed solutions with the research objective (RQs) based on your research data.

* If required demonstrate and visualize your proposed solutions in various diagrams describing the process of your solutions.
* Integrates alternate and divergent ideas or processes to solve the problem mentioned in the introduction section.

For Example:

RQ1: …………………..

* Write here the answer of RQ1 according to the research data presented in Result section.

RQ2: …………………..

* Write here the answer of RQ2 according to the research data presented in Result section.

**Solution Validation**

1. Provide a description of how you plan to test/verify your proposed solution. And what are the results of your test/verification. For example, provide a description of the accuracy of your research findings. This can be done by:

* Comparing your research findings with the results of other existing published studies
* Using some mathematical formula to prove your findings are logically consistent.
* Applying your findings to the real-world case or simulation software tools

Conclusion

Provide discussion of the overall coverage of the article and concluding remarks.

* Define the project/thesis objective again considering the existing problems and challenges.
* Discuss your data collection/data analysis process in providing solutions.
* Discuss the thesis/project solutions and with any significant remarks.
* Discuss the limitations of your work where the next researcher can start. Provide a description of the **limitations of your study** and how the **future researcher** can extend your study further.

**ACKNOWLEDGMENT (Optional)**

Any acknowledgment to fellow researchers, funding grants, and conflicts of interest should be placed within this section. Funding agency and conflicts of interest statements are now required in all journal article submissions based on information we have received from the indices.

**Funding Agency (Optional)**

All journal articles are required to have funding information at the end of their articles. Articles that are being published under the traditional, subscription-based model in Hybrid Open Access journals could provide funding information if an outside source funded their ability to do their research but did not fund open access publishing. If the authors have received no funding for their article, please see below under the “No Funding Information” heading.

**REFERENCES**

Use a single referencing style (e.g., APA) to provide references to citations you have used in the article.

Appendix (Optional)

Appendices are at the end of the manuscript and, if more than one, numbered with numerals. Any Figure or Table numbering should continue from article body. If Figure or Tables are not called out and explained within the article, please provide prior to its placement within the Appendix.

**Paragraph Text Format:**

* Style: Times New Roman
* Size: 12
* Space: 1.0
* Text Alignment: Justify
* Paragraph Alignment: left indent, one line gap between paragraphs
* Keep one line gap before and after the heading and sub-heading.
* Assignment Length: Maximum 8 pages (including cover page, evaluation, and reference)
* Provide figure/table number and title of the figure/table and refer this figure/table number in the text.
* Do not use first or second person (I, me, my, we, us, our, you…). Instead use “this article” or “the authors”.