University of Westminster
School of Computer Science and Engineering

7BDIN006W	Big Data Theory and Practice
Module leader	Natalia YERASHENIA
Unit	Assessment 002 – **Technical Report (Group) Coursework.** The coursework is associated with the Assessment 003 – Presentation Coursework and although two marks (one for each assessment component) will be reported the two assessments should be considered as part of the same assessment.
Weighting:	60%
Qualifying mark	40%
Description	This group-based coursework delves into the practical applications of Big Data across various industries. Participants will form groups to research and articulate the adoption of Big Data technologies in a chosen sector, assessing its impact, effectiveness, and related legal and ethical concerns. A crucial aspect of this module is fostering teamwork, enabling members to capitalize on individual strengths, manage conflicts, and collectively contribute to the project. Regular meetings with the module team ensure guidance and feedback throughout. An individual component requires reflection on group dynamics and personal contributions. The submission must adhere to specified formatting and referencing guidelines, with word count limits for different parts of the report.
Learning Outcomes Covered in this Assignment:	LO1 competently discuss important aspects of the Big Data Analytics landscape, including the nature and characterisation of Big Data problems and the three key sources of Big Data (people, organisations and sensors, using appropriate Big Data Systems applications to support their arguments and illustrate benefits; LO2 critically evaluate and compare existing solutions in relation to data collection, monitoring, storage, analysis and reporting and evaluate the architectural components and programming models used for scalable big data analysis; LO4 evaluate the quality of data; analyse and assess legal, ethical, social & professional issues associated with the persistent storage and maintenance of personal data, and propose appropriate solutions to resolve such issues; LO5 research topics at the forefront of the discipline and produce an academic level report.
Handed Out:	16th October 2023
Due Date	**8th January 2024** Submission by 13:00 hours
Expected deliverables	Online Submission through Blackboard (BB)
Method of Submission:	Electronic submission on BB via a provided link close to the submission time.
Type of Feedback and Due Date:	Written feedback and provisional marks will be provided by **29th January 2023** through BB; further verbal feedback can be arranged upon request All marks will remain provisional until formally agreed by an Assessment Board.
D/Referrals:	D/Referral coursework will be made available a few days after the results are ratified at the June Assessment Board and they will be due by early July

Penalties for Late Submission

If you submit your coursework late but within 24 hours of the submission deadline, your work will be marked and will have ten percentage points of the overall available marks deducted, to a minimum of the pass mark.

That is, if your coursework mark is above 60%, then 10% marks will be deducted as a penalty for late submission; if your coursework mark is in the 50%-59% range, then your coursework will be capped at 50%; no penalties will apply if you do not achieve the pass mark.

If you submit your coursework more than 24 hours after the submission deadline, a mark of zero will be awarded for the work in question.

If you cannot submit your work for reasons beyond your control, such as illness and/or other issues, then you should consider submitting to the Registry a Mitigating Circumstances claim explaining the reason for the late or non-submission of your work. The outcome of your claim will be reported to the Assessment Board, which will decide whether any penalties for late submission should stand. More information on Mitigation Circumstances and a claim form are available at Mitigating Circumstances Claims.

Plagiarism

Plagiarism is considered as a serious assessment offence, and suspected cases of plagiarism will be reported to the academic misconduct unit.

Assessment regulations

Refer to the "Important Information Relating to Assessment" section of your Course Handbook for more information on how you are assessed, penalties and late submissions, what constitutes plagiarism, etc. More detailed information regarding University Assessment Regulations governing coursework submission and

deadlines are detailed within Section 6 of the University's Handbook of Academic Regulations.

Coursework Description

PARTICIPATION AND GROUP DYNAMICS

The essence of this assignment is collaborative work. Each participant's dedication, active involvement, and commitment are essential in driving the project to successful completion.

Engagement Criteria

Active Participation: Regularly attend group discussions, ensuring your input is meaningful and constructive.
Task Management: Promptly complete assignments and responsibilities designated to you.
Constructive Contribution: Your proactive participation is expected. Should you fail to contribute or participate actively, you risk receiving a grade of zero for this coursework.

Scheduled Meetings and Feedback Sessions

Your group is required to organize regular interactions with a designated member of the module team (your tutor). The agenda for these interactions will be:
Assessment of Progress: Reviewing the strides made so far and ensuring alignment with project objectives.
Discussion & Brainstorming: Present your group's findings, challenges, and potential strategies to the module team member.
Guidance & Clarifications: Obtain valuable feedback and direction. This is also the time to clear any doubts or queries.
Collaborative Planning: Strategize and plan the next steps based on the feedback received.
It's crucial to note that attendance is mandatory for all members. These sessions are scheduled during the usual seminar/tutorial times.
In addition, each group is expected to host at least *5 independent group meetings*. These can be held in-class, on-campus, or online. It's essential to document the proceedings, decisions, and action points of these meetings, maintaining a detailed *meeting minutes* record.

Group Formation and Logistics

Group Size: Groups should ideally comprise a minimum of 5 and a maximum of 7 students to ensure efficient collaboration and diverse viewpoints.
Initiating Formation: Students are encouraged to either proactively form groups or actively seek one to join.
Tutor Alignment: For efficient feedback and consistent evaluation, it's recommended that all members of a group share the same tutor.
Details Submission: The Module Leader should be informed about each group's composition, the chosen project topic, members' names, and their student IDs. Ensure this information is submitted by Friday, October 27.

For Those Without Groups: If you've not aligned with any group by the designated deadline, you'll be assigned to one by November 10. Please be aware that decisions made by the Module Leader in this regard will be final.

PART A: GROUP COMPONENT (80 MARKS)

Objective: Delve into the intricacies of Big Data and its various applications across different sectors, evaluating its multifaceted implications.

1. INDUSTRY SELECTION

Choose one industry or sector from the provided list:

- Education Industry
- Government Sector
- Banking and Securities
- Insurance Sector
- Construction Sector
- IoT industries
- Consumer Trade
- Marketing
- Communications & Media
- Sports
- Space Sector
- Transportation Industries

Considerations for Selection: Prioritize industries showcasing a vast range of Big Data applications and contemplate its associated challenges and benefits.

2. DETAILED INVESTIGATION

Your extensive study should touch upon the following aspects:

Project Landscape (10 marks):
- Pinpoint major Big Data applications or projects prevalent in the industry.
- Understand the primary objectives of such ventures and assess their accomplishment.
- Scrutinise the motivating factors and obstacles that led to these initiatives.

Technology Adoption (10 marks):
- Recognize the key technologies and tools in use, such as Hadoop, noSQL, in-memory data processing, data streaming, etc.
- Decipher the reasons behind the choice of certain technologies over others.

Impact Analysis (20 marks):
- Evaluate the direct and indirect impacts of Big Data applications in the selected industry.
- Analyse both the triumphs and setbacks and their implications.

Solution Analysis (20 marks):
- Explore the specific solutions implemented in response to the industry's Big Data demands.
- Consider the adaptability, scalability, and proficiency of these solutions.

Data Governance & ROI (20 marks):

- Probe any concerns or strategies around Data Governance, considering aspects like data privacy, security, and compliances such as GDPR.
- Ascertain the ROI or other gains from Big Data initiatives, be it in monetary terms, operational efficiencies, customer satisfaction, or other relevant benchmarks.

3. ACADEMIC REPORT COMPILATION

Introduction: Kick off with the reasoning behind the chosen industry, acclimating the reader to its prominence in the Big Data sphere.

Challenges & Data Landscape:
- Detail the unique challenges the industry confronts and how Big Data could be a solution.
- Provide an overview of the data nature within the industry and its importance.

Technology & Solution Analysis: Delve deep into the technologies employed, highlighting their relevance, efficacy, and any associated perils.

Outcomes & Reflection: Share insights on the results of the Big Data endeavours – both the pros and cons. Reflect on the learnings, potential enhancements, and future prospects.

Meeting Minutes: Incorporate records from *a minimum of five group meetings*. This section should provide clarity on the discussion points, decisions made, individual contributions, and action items for future meetings.

Conclusion: Conclude with a summary of the key discoveries, inferences, and a visionary statement about the industry's evolving relationship with Big Data.
References: Validate your arguments with citations from reputable sources. Ensure adherence to the University of Westminster's citation guidelines.

RECOMMENDATIONS FOR A HEAD START:
- **Preliminary Research:** Begin with esteemed platforms and vendors like IBM, Oracle, AWS, Data Science Foundation, and Kaggle for foundational data.
- **Collaborative Effort:** Prior to the first group meeting, each member should individually delve into possible industries of interest. This approach ensures a spectrum of viewpoints and comprehensive data to select the most impactful industry.
- **Data Authenticity:** Emphasize sourcing data from credible and acknowledged platforms, ensuring the depth and quality of research for an impeccable report.

4. ADHERENCE TO BLOOM'S TAXONOMY FOR LEVEL 7 STUDENTS

For a report of this stature, it is essential to ensure that it aligns with the cognitive complexity and depth expected of Level 7 students as defined by *Bloom's Taxonomy*. The report should not merely scratch the surface but must dive deep, demonstrating:
- Knowledge & Comprehension: Exhibit a profound understanding of Big Data, its intricacies, technologies, and its significance in the chosen industry.
- Application: Apply the acquired knowledge to interpret situations, challenges, or opportunities specific to the industry, showcasing a clear grasp of practical scenarios.
- Analysis: Dissect the subject matter to understand its finer components, relationships, and underlying structures. Evaluate the efficacy of Big Data applications in real-world industry settings and deduce insights.

- Synthesis: Conjoin the diverse elements to draft a coherent, innovative narrative, perhaps proposing a unique perspective or forecasting future trends based on current data and analysis.
- Evaluation: Critically appraise the information, technologies, and applications in play, making informed judgments and offering recommendations where necessary.

PART B: INDIVIDUAL COMPONENT (20 MARKS)

The purpose of this segment is to delve deeper into the individual experiences and observations during the group activity. This not only serves as a critical reflection phase for the group's synergies and dynamics but also enables a fair and comprehensive evaluation of every participant's contribution, effort, and impact.

Group Work Evaluation (10 Marks):
This task prompts introspection into the inner workings and dynamics of the group. Key areas to address include.
Strategic Organisation: Discuss how the group was structured and organized for optimal collaboration and efficiency. This includes communication channels, meeting frequencies, and decision-making protocols.
Task Allocation: Elaborate on the strategy and methodology behind distributing tasks among members. Were roles and responsibilities assigned based on expertise, interest, or consensus?
Quality Assurance: Reflect on the overall quality of the group's collective output. Highlight significant achievements, areas of improvement, challenges faced, and lessons learned during the project.
Evidence-Based Claims: It's imperative to support your insights and claims with tangible evidence. This might include task trackers, email chains, or other relevant documentation. Organize these in the appendices for clarity and easy reference.

Individual Contribution Assessment (10 Marks):
This task requires a balanced and objective evaluation of each team member's input and influence on the project, including your own.
Strengths: Recognize and appreciate the unique strengths each member brought to the table. This could be in terms of technical expertise, leadership, creativity, or problem-solving abilities.
Areas for Improvement: Constructively address areas where members could potentially enhance their contributions or skills for future collaborations.
Impact Assessment: Evaluate the overall impact of each member's contribution on the group's performance. Were there any standout performances or contributions that significantly steered the project's direction?

FORMATTING AND SUBMISSION GUIDELINES

Word Count:

- Part A: The maximum word count for this section is set at 2500 words. This allows for an in-depth analysis while maintaining a concise narrative.
- Part B: Reflections should not exceed a total of 500 words. Ensure your reflections are focused and to the point.

Please Note: Word counts exceeding the stipulated limit by more than 10% might attract penalties. It's advised to stay within the given range to avoid any deductions.

Document Specifications:

Size & Dimensions: All submissions should be formatted for A4 paper size.
Margins: Ensure a uniform 1-inch margin on all sides of your document for a clean presentation.
Font Choices: Use the Arial font set of 10pt for clarity and readability.
Spacing: The document should be set to 1.5 line spacing, and it's recommended to have a 6pt gap between paragraphs to demarcate sections clearly.

Citation and Referencing:

All references within your assignment must adhere to the University of Westminster's specified referencing style. For guidance or a refresher, the university provides a detailed guide on our official website: Referencing your work.

Submission Details:

- Deadline for Submission: All assignments are to be submitted no later than **13:00 on January 8, 2024.**
- Platform for Submission: Assignments are to be uploaded to Blackboard (BB). The file should contain both Part A (which will be consistent for all group members) and Part B.

Important Note: Marks awarded for Part A will be uniform for all members of a particular group, emphasising the collective nature of the assignment. However, Part B will be assessed on an individual basis, reflecting personal insights and evaluations.