# Group Assignment

The group assignment will be completed in groups of 4 to 6 students. You will be creating a demonstration to show the class on a database topic of your own choice.

In the end, there will be a 10 minute demonstration (with a nice presentation that you could record in advance) along with a report document that contains screenshots of your demo and the background information about the topic.

The report will get created by preparing a detailed “Proposal” which should be a preliminary version of the report – with all the background information and a plan of what you will build for the demonstration.  **I strongly encourage you to hand in both the preliminary version and the final version of the proposal on time.** This will give you a chance to fix your preliminary version of the proposal to get a great final proposal that will likely just need to have the demonstration details updated to become the final report.

The final report will likely be a fairly lengthy document (depending upon the number of screenshots and diagrams that you reference and copy from online materials and from your demo portion of your presentation). A typical length would be 20 to 30 pages. In addition, you need to prepare a **short (10 minutes max) presentation**. I suggest that you do this with PowerPoint and record the presentation in advance.

You need to create a workplan for your proposal, which will eventually change into the documentation of the actual effort spent on each part of the assignment that is required for the final report. You should plan for **approximately 15 hours** of effort per student; with those 15 hours including your planning meetings and building the demonstration, report, and presentation. **This limits the scope considerably – DO NOT OVER-PROMISE!**

## Group Membership

You have the **opportunity** to pick your own team members. After you have discussed group membership, **one** of the group members should go online and join one of the empty groups in Brightspace (by Navigating to Activities > Groups); then all the other group members can join the same group. There is a strict deadline of noon at the end of the Friday of the second week to have picked your group. There are a set of assignment groups setup and you are able to self-enroll up to the limit of 6 members. Group members do not need to be in the same lab section, but do need to be in the same theory section. The groups in Brightspace are named based on the theory section numbering.

If you do not join one of the groups by the end of Week 2, you will be assigned a group.

**Please do not join an existing group without pre-arranging it with those group members!**

It is not necessary to divide each part of the work equally across the group members. Actually, you will need to split the work carefully so that one person in the group is responsible for the work for each item. For example, you might choose to have one person concentrate on creating the recorded presentation – with subtitles etc, so that you get a GREAT presentation mark. In the past, I have had students that created an avatar and delivered a recorded presentation on a virtual stage.

## Planning Your Demonstration and Proposal

**The focus of this group assignment needs to be on the demonstration. Having a purely theoretical report is not acceptable.**

The ‘initial proposal’ is practically just the first version of the document that will become your final report. It has a slightly different requirement for the content (see below), but if you put the time into building a great proposal, then the report will be MUCH simpler to complete, and it ensures that you have two chances to get feedback on your content.

Both the initial proposal and the final version of the proposal MUST follow the proposal template table of contents at the end of this document. It should be an MS-Word document with some diagrams (properly referenced if taken from online sources) and a description of your topic for demonstration, a list of group members, and workplan). I encourage you to spend as much time as you can on this initial proposal so that it covers most of the areas you will have in your final report.

If you are unsure about what topic to choose, I encourage you to look at the list in this document, and to send an email to your theory professor in advance of the initial proposal date so that you get your topic ‘pre-approved’.

The second draft of the report is the “final proposal” which again MUST follow the proposal template table of contents at the end of this document. It should address any of the feedback that you received from your initial proposal. It should then have a relatively strong background and context section and clearly indicate what you will be doing for the practical demonstration part of your presentation. **If you do a very good job on the final proposal, then these sections will get reused and will make up a large portion of the content of the final report.**

The final version of the report MUST follow the **report** template table of contents at the end of this document. You will see that many of the required sections are the same as for the proposals. The main difference is that the workplan and risks sections become the new work breakdown and lessons learned. Also, the demonstration section will get expanded and filled in more – instead of ‘we will build ...’ It becomes ‘as seen in the screenshot, we built …’. In the end, the report will likely be over 20 pages in MS-Word, including many references and diagrams which you may be including. You will likely have several pages of screen dumps from your practical demonstration.

## Preparing Your Presentation

In addition to the final report, your team must provide a presentation (10 min maximum) to the class which will be scheduled near the end of term during the theory section sessions. You can either do a live presentation or prepare a video presentation. Many great presentations have been prepared in the past using the Open Broadcast System (OBS) software tool to capture a live PowerPoint presentation including a video of the presenter.

## Avoiding Plagiarism

You are strongly **encouraged** to use materials on the Internet from sources such as Oracle, Microsoft, etc. BUT the materials that you include in your proposal, report, and presentation must be clearly referenced as to where they have been obtained. You can use diagrams and other materials, but you must make sure that the work that you present as your own is actually your own work. Unreferenced materials must be avoided.

Academic misconduct stems from presenting someone else’s work as your own. Make sure that you have all materials referenced. **All group members are responsible** for ensuring that the materials provided are clearly referenced and not misrepresented as original work.

## Steps

1. **Group Chosen: End of Week 2 online**
2. **Topic Chosen: End of Week 2 suggest you email professor to reserve your topic**
3. **Initial Proposal End of Week 4 1%**
4. **Group Assignment Proposal: End of Week 6 4%**
5. **Group Written Report (& Work Products): Week 12-13 15%**
6. **Group In-class Presentation (& Slides): Weeks 12-13 5%**

**Notes**:

1. Work toward building a great in-class presentation. Make sure you pick a topic that you can demonstrate in-class quickly – only ***10 min***. You should make a “script” of exactly what you would like to have in your presentation and work towards that during the term.
2. The proposal and final report “Table of Contents” are included at the end of this document.
3. The way in which the work is divided among group members is documented in the proposal, and should be aligned along the strengths of each individual. For example, your group may choose to have one or two persons prepare and record the final presentation, while other members do the majority of the implementation of the demo scripts and writing of the proposals and report.
4. **If the work has not been split fairly among group members, then the grades assigned to each group member will be different.**

## Considerations

1. Ideally, pick a topic and discuss it with the professor (by email) BEFORE your team submits the initial proposal.
2. Your topic should be something where you can build an example “application” or set of scripts that demonstrate the issue and show how it can be solved. You will need to do some research right away to get your demonstration planned.
3. You should specify in your proposal how you will divide the work among team members. Try to indicate the effort level (hours) for each component, and never have 2 members accountable for any single deliverable. This means that the document has a table showing a list of deliverables (e.g., create draft report) or activities (e.g., review and comment on draft report) so that it shows the effort in enough detail to show exactly who is doing what.

## Possible Topics

**You can pick a different topic** that might be of interest to you and the other class members, but here is a list in case you need an idea.

1. Using Oracle SQL Developer Data Modeler – features and limitations.
2. Setup and use of Oracle Enterprise Manager.
3. Using SQLite database on Swift (iOS).
4. Replication across multiple servers and failure recovery – using Oracle
5. Replication across multiple servers and failure recovery – using MongoDB
6. SQL Insertion (unauthorized modifications caused by user-supplied data)
7. Using MongoDB with Python (web catalog, or similar application)
8. How best to store GPS locations for use with Google Map APIs.
9. GPS location mapping using Google APIs (map with location over time and ‘route’)
10. What are the benefits of a star schema and how is it used
11. Using triggers to constrain data content – best practices and user experience pitfalls
12. Multi-lingual databases; normalization and best practices.
13. Timestamps: handling Apache log formats
14. Using MS-Excel with ODBC database tables to do updates and reporting (e.g., COVID statistics and charts)
15. Using Tableau with data imported from the Government of Canada Open Data portal.
16. Handling large objects in RDBMS systems – performance considerations and best practices for videos, etc.
17. Storing and retrieving XML data using Oracle 19c or later
18. Storing and retrieving JSON data using Oracle 19c or later
19. Security Implications in using JSON with Oracle
20. Using Neo4j to measure “distance” between nodes in a weighted graph.
21. Encrypted data and long-term storage using Public Key Infrastructure
22. Oracle Locking Mechanisms – best practices.
23. Oracle Shared and Dedicated Server Configuration – Container databases
24. Oracle Recovery Catalog Database – RMAN usage
25. Running Oracle on ASM (Automatic Storage Manage).
26. Oracle Resource Manager
27. Oracle Autonomous Database

(Something current and interesting – data, security, replication, analysis, ….)

If you would like to work on something that is not on the list, email your theory professor and get the topic cleared before you submit your initial proposal.

## Grading Scheme

The grading rubrics are as follows:

Proposal(s):

20% Followed Template

20% Scope is clear and well documented

20% Background information is provided and relevant

20% Demonstration is described clearly even if all details are not known yet

20% Work Plan - who does what and when

Presentation:

20% Background

20% Context

20% Demonstration

20% Delivery

20% Timing

Report:

20% Context (set scope and background)

20% Content (information provided)

20% Demo Documentation (screen shots, etc)

20% Structure / Organization (e.g., did you follow the template)

20% Overall Scope completed as proposed

## Proposal Table of Contents

Please use the following table of contents as a guide for the both the initial proposal and final proposal. The proposal can be short, but likely will be at least 10 pages in order to clearly indicate that you understand the scope and have a clear plan on how you will build a demonstration. The critical elements are the description of your topic, group, and workplan.

1. Title Page
   1. Topic Title
   2. Group Members and email addresses.
2. Introduction
   1. Topic Description Paragraphs
   2. Why we chose this topic
3. Problem Description (Background and Context)
   1. Who: who cares and who does it affect
   2. What: what is the data aspect of the issue
   3. Where: is this a client-side problem, a replication problem, a server capacity problem, etc.
   4. When: any timing aspects (processes, steps, etc.)
   5. Why: any laws, regulations, or other constraints
   6. How: how does the issue happen and get resolved
4. Solution Demonstration Description
   1. What you will be doing for the solution demonstration and what do you need to build
      1. Components, scripts, database setup, etc.
   2. Risks
      1. Give a list of known risks or major unknowns.
5. Work Plan
   1. Table with components and deliverables (including report writing, presentation creation, and solution building)
      1. Component or deliverable name
      2. Indicate the time period your team expects to be doing the work (e.g., Week 2-3)
      3. Indicate the number of hours expected from each person for each component or deliverable.
      4. Indicate the single responsible individual (in the rare cases when 2 or more members are responsible, split deliverables so that 1 person is responsible for each part of the deliverable).

### Report Table of Contents

Please use the following table of contents as a guide for the final report. Use the proposal and extend the problem description and solution areas to indicate the real finished assignment work. The report does not need to be overly lengthy, likely a 20-30 page MS-Word document with lots of diagrams and a description of your topic, group, workplan, actual work effort, results, and lessons learned.

1. Title Page
   1. Topic Title
   2. Group Members and email addresses.
2. Introduction
   1. Topic Description Paragraph
   2. Why we chose this topic
3. Problem Description (Background and Context)
   1. Who: who cares and who does it affect
   2. What: what is the data aspect of the issue
   3. Where: is this a client-side problem, a replication problem, a server capacity problem, etc.
   4. When: any timing aspects (processes, steps, etc.)
   5. Why: any laws, regulations, or other constraints
   6. How: how does the issue happen and get resolved
4. Solution Description & Results
   1. What you did for the solution
      1. Components, scripts, database setup, etc.
      2. Screen shots, Details...
5. Work Plan
   1. Table with components and deliverables (including report writing, presentation creation, and solution building)
      1. Component or deliverable name
      2. Indicate the time period your team expects to be doing the work (e.g., Week 2-3)
      3. Indicate the number of hours expected from each person for each component or deliverable.
      4. Indicate the single responsible individual (in the rare cases when 2 or more members are responsible, split deliverables so that 1 person is responsible for each part of the deliverable).
      5. Indicate the actual time period and number of hours spent.
6. Lessons Learned
   1. Risks that needed to be mitigated (look at your list of known risks)
   2. Overall Experience