COMP313 Project Management

Term Project

Requirements for the development of the Consumption Smartcard System

During the Covid-19 pandemics, Macao government strives to find ways of restoring its economy. One of the measures taken is to give out consumption money to the citizens for boosting up the internal consumption. Now, the government requests the local company MacauPass to coordinate this policy in the regard of system implementation. You as a project manager are appointed to lead this development project. For serving the purpose of this project, the sponsor, the government, has a time constraint as to when this project must be fully deployed. Besides, the prototype must be delivered one month after the initiation of the project.

You need to write a project report that include the following parts (*the words in bold typeface indicate the deliverables for submission*):

1. **Project Scope Management**

   Create a WBS for this project and enter the tasks in MS Project. Create milestones and summary tasks. Assume that some of the project management tasks are similar to tasks from a previous project and the scope is defined based on it. Some of the specific analysis, design, and implementation tasks will be as follows. Group them into the 4 high-level activities: Analysis, Design, Implementation and Deployment.

   (a) Background study on the e-payment implementation of similar projects.
   (b) Collect detailed requirements from the relevant government departments about design preferences.
   (c) Develop a prototype to show the payment procedure.
   (d) Design the overall software architecture.
   (e) Design database.
   (f) Design interfaces both for web browsers and mobile phones.
   (g) Design the hardware configuration (smartcards, card readers etc.).
   (h) Design the security scheme for safeguarding the transactions over the internet.
   (i) Develop interface templates for the sponsor to review (background color for all pages, position of navigation buttons, layout of text and images, typography, including basic text font and display type, and so on)
   (j) Create a site map or hierarchy chart showing the flow of web pages.
   (k) Create the individual web pages for the site.
   (l) Create database for the server-site modules.
   (m) Source necessary library modules for client-side coding.
   (n) Code the server-site modules.
   (o) Code and configure the client-side devices (the handheld terminals with smartcard reader)
   (p) Integrate the server-side modules and the pages.
   (q) Performance stress tests on the system (able to process 250,000 transactions per hour)
   (r) Have the sponsor to perform UAT on the system.

(s) Install the web site on the MacauPass's web server.
(t) Install smartcard readers for payment in shops.
(u) Configure the smartcards before handed out to the sponsor.
(v) Teach shop cashiers to use the handheld terminal.
(w) Create technical training materials for the staff on how to use and maintain the operations.
(x) Train the staff on operating and maintaining the system.

2. Project Time Management

Determine a realistic duration for each task, and then link the tasks as appropriate with an intention of arriving at the shortest schedule. Be sure that all tasks are linked (in some fashion) to the start and end of the project. As requested by the sponsor, you have 8 months to complete the entire project. Set at least 3 milestones at where you think appropriate.

(a) Print the **Project Schedule (Gantt Chart)** to show the project schedule with necessary elements.
(b) Print the **PDM (Precedence Diagramming Method) network diagram** for the project for analyzing the Mandatory dependencies. Show the tasks of the WBS only. (*In order to make it readable, the network diagram must be drawn in a single sheet clearly. Use the letters to represent the tasks. Don't use the MS Project's default print-out function for the diagram because I find it unreadable without proper post-modification.*)
(c) Conduct a **Critical path** analysis**.**

3. Project Cost Management

Assume that you have 3 people working on the project, including one experienced team member (Bill) who is good at analysis and design and charges $300 per hour; and two others (Lisa and Kent) who are good at design and implementation and each of them charges $200 per hour. All of them are capable of dealing with other tasks, such as deployment. You are the project manager who takes part in managing the entire development process and you charge $500 per hour.

(a) Based on the project schedule, assign tasks to team members according to their capabilities (including yourself) reasonably for the entire project. Except for you, the other team members should be fairly assigned with workload as much as possible. (For simplicity, we ignore the costs of other resources such as hardware, software fees etc.) Calculate the costs and make up a **Resource Sheet** (*just a table to show all the resources and the number of hours worked and the total costs in the project*).
(b) Use the data form Resource Sheet to make the budget schedule (**Cost Baseline**) for your project. Don't forget to add the Contingency Reserve to the Cost Baseline table to make it look complete.
(c) The computing equipment with relevant maintenance service are rented for a certain amount (i.e. $9,000) per month.
(d) At the end of the 4th month, you are obligated to report the progress to your top management. Make use of EVM (Earned Value Management) method to do the relevant performance measurements, variance analysis and forecasting for your project. (*You need to make up your figures reasonably, such as Earned Values and Actual Costs. Show the steps of calculations.*)
(e) Print the **EVM graphs and the relevant calculations and results** specified in (c).
(f) Write a **paragraph to describe the project progress at the end of 4th month based on the graph and figures** in (d) and (e).

4. Project Human Resource Management

(a) Make and print a **Responsibility Assignment Matrix (RAM)** according to the skill-sets and knowledge of the team members.

(b) Make a **Resource Histogram** to reflect the work distribution among team members each week.

5. Changes and Adjustments

By the end of the 4th month, an unexpected situation happens that forces you to make some changes to accommodate the issues in hope of steering the course of the project towards its success. *(For example, the sponsor requests the project manager to expedite the project and to complete it 2 months earlier; a disaster happens; the chief engineer gets sick and is no longer capable to carry on his/her duties; etc.)* Now, you need to propose a change request involving adjustments to accommodate this incidence with the constraint of maintaining the original budget. If the change must induce an increase of budget, justify the increase in your case. Write **a paragraph or two to document the changes from the original plan and to appraise the implications thus caused to the project** (*try to use as many PM concepts (fast-tracking, contingent plan, secondary risk, contingent reserve,…) as you can to tell your story***)**.

Requirements on Deliverables

- A report (in PDF format – softcopy only) that contains all the required documents, diagrams, charts and job distribution among team members with title page, a table of content and proper page index (*I will just grade an intact report only*. DON'T hand me separate pieces of paper.)

Other information

- You do the work in group of 2 people. However, you can work alone if you cannot find a partner. But you won't get extra marks for working alone.
- Again, try to make your report READABLE, otherwise you may run the risk of being misunderstood, thus graded lower. (*no hand-drawing any diagrams*)
- Plagiarism – A *zero mark will be given if you copy someone else's work or you let someone copy your work.*

Marking scheme and marking criteria:

The following is the mark break-down:

Item	*Percentage*
(1) WBS, Gantt Chart design	35%
(2) Budget and Cost allocation	30%
(3) Human resources allocation	7%
(4) Adjustment and re-allocation	18%
(5) Report format, grammar & style	10%

The marking criteria are listed as follows:

1. WBS, Gantt Chart design: score 80-100% if the WBS and Gantt Chart contain relevant activities, including proper management tasks, milestones and reasonable, efficient logical dependencies. 70-80% if the design is fair with some missing components. 50-70% if the design has major flaws. 0-50% if the design is unacceptable.
2. Budget and Cost allocation: 80-100% if the allocation is correct and the distribution of resources over all the process groups is suitable. 70-80% if the allocation is partially correct and the distribution is fair. 50-70% if the allocation is partially correct and the distribution is poor. 0-50% if both the allocation and the distribution are incorrect.
3. Human resources allocation: 80-100% if the allocation is correct and has good description of the change handling before the changes and after the changes (after removing one person for time-off period). 70-80% if the allocation is partially correct after the changes. 50-70% if the allocation is incorrect after changes but the project is still sustainable. 0-50% if the allocation is incorrect after changes and the project cannot be completed under budget and within the time limit.
4. Report format, grammar and writing style: 0-10%
5. Each group needs to include the job distribution of the project team based on his/her effort and contribution. You group simply needs to declare the percentages of works individual team members have undertaken. Include your **job distribution** at the end of report. If there is no declaration of job distribution, the percentages for both partners are assumed 50-50.

   The calculation is as follows:

   a) 85% of the group final score is shared; 15% of the final score will be distributed to individual members according to the job (effort & contribution) distribution percentage.
   b) For instance, the group final score is 80 and the job distribution between X and Y is 60% to 40%. X should get 80*85% + (80*15%*2*60%). Y should get 80*85% + (80*15%*2*40%). However, the maximum individual score will not exceed 5% more than the group final score, that is, the calculated individual score = MIN(group final score *1.05, calculated individual score).