Question 1(a)

Effort is the amount of work required to complete a task (*Effort vs Duration vs Elapsed-Time*, 2020). Elapsed time is the actual amount of time that has taken to complete that task (*Effort vs Duration vs Elapsed-Time*, 2020). This can vary depending upon how many people are participating in finishing the work. The amount of effort that is needed to finish a task is usually static and there is nothing that can be done to change that (Cadle & Yeates, 2008). However, the project manager can have an impact on the elapsed time by devoting more resources to a task. Therefore, the project manager can use this understanding to finish the project more quickly.

Effort and elapsed time are also concepts which are necessary to formulate a schedule. This concept can be used with the creation of graphs that will show two aspects. This includes:

1. The sequence of the work that will be finished
2. The start and finish time of the work.

This can also be described using different visual graphs. Effort can be identified using a dependency network diagram. Elapsed time can be demonstrated using a schedule diagram. The schedule diagram for a single person can be modified by identifying tasks which can work in parallel (Cadle & Yeates, 2008).

Question 1(b)

There are several factors which will have an influence on the availability of staff members. These can include, leave, training, scheduling, sick days, and people quitting. You can categorise staff availability into two aspects:

1. **Those which cannot be anticipated**

There are numerous unpredictable things which can transpire that can make staff unavailable. This includes things like a staff member losing days at work because a family member has passed. The project manager will find it difficult to incorporate these losses into the project plan.

2. **Those which can be anticipated**

There are several predictable things that a project manager can anticipate. This makes it easy for the project manager to incorporate these types of losses into the project plan. For example:

a. Leave and training

Leave and training are expected losses of availability by the staff members (Cadle & Yeates, 2008).

b. The actual available hours of staff

A staff member is not available all hours of the day on all days of the week. The project manager can then anticipate how many days a staff member will be available during the month (Cadle & Yeates, 2008). One common assumption is that a full-time worker will be available 18 days of the month (Cadle & Yeates, 2008). This equates to a staff member being available 4 days per week.

c. The actual work that is being done while available

Staff members are not always doing work that is related to tasks associated with the project. Team members may be conducting meetings, communicating with clients, or running late to work (Cadle & Yeates, 2008). This will also influence the number of hours each staff member is available to work on project tasks.

Question 2(a)

There are several human factors that affect estimation which include:

1. **Competition**

Estimates tend to be unreasonable representations of real-life figures. A project manager may be inclined to state something inaccurately in-order to make a competitive bid (Cadle & Yeates, 2008). For example, the project manager may want to win favour of their tenders by offering unrealistic competitive pricing. This can influence the estimation of the schedule and the cost at which the project is tendered at.

2. **Skills and Aptitude**

A person must possess certain skills and experience to be capable of estimating correctly (“9 Human Factors in Estimating,” 1995). A project manager may make incorrect estimates without having or acquiring these skills. These includes errors relating to interpreting trends, forecasting, and judgement.

3. **Complexity**

Estimation is a complex task that may require the consideration of many variables (“9 Human Factors in Estimating,” 1995). Consequently, several unknown variables may be overlooked by the project manager. This may significantly impact the accuracy of the estimate, especially if the unknown variable had a major influence on the thing being estimated.

4. **Pressure**

A project manager may be pressured by deadlines and demands by his organization (Cadle & Yeates, 2008). The pressure may cause the project manager to understate estimates. This would make it appear that the project would be delivered within time and budget.

<u>Question 2(b)</u>

The estimates can be improved using research, metrics, multiple estimation methods, human-resources, and risk assessments as explained below:

1. **Reliable metrics:** The project manager must perform rigorous research on achievable, reliable, and realistic metrics (Cadle & Yeates, 2008).
2. **Internal Metrics:** The project management team should build up and use large amounts of internal metrics from projects that they have undertaken in the past (Cadle & Yeates, 2008).
3. **Consensus:** This includes involving judgement and input by various people in the organization. For example, the Delphi technique requires that a project manager takes input from a person who is an expert (Cadle & Yeates, 2008).
4. **Multiple Estimation methods:** By utilizing multiple estimation methods to improve accuracy (Cadle & Yeates, 2008).
5. **Risk Assessments:** Estimation can also be improved by using proper risk assessment techniques. This allows the project manager to determine the probability of reaching their targets.

<u>Question 3(a)</u>

A project has activities that are divided into separate sections. A dependency is when the current activity requires another activity to be completed before it can be started (Cadle & Yeates, 2008). There are many tools which can be used to analyse dependencies, these include, network diagrams which is also known as a PERT chart. A network diagram is an activity-on-arrow diagram that connects each activity with other activities using arrows (Cadle & Yeates, 2008). An activity is dependent upon another activity if another activity is prior in its generation and its arrow is facing the other. Other information can be added such as duration, estimated start time and estimated finish time (Cadle & Yeates, 2008). From this information a critical path can be identified which is the longest path to complete a project. A critical path of a project can help identify which of the paths will cause an overall delay to the rest of the project (Cadle & Yeates, 2008).

Question 3(b)

Case 1: A project manager needs to conduct interviews of their customers before they can complete the business case. The interviews need to be completed before the project manager can begin producing the business case.

Case 2: A project may require that the hardware be ordered from a supplier and assembled at the site before the software can be installed. Software installation is therefore dependent upon the arrival and installation of the hardware.

Case 3: Software can only be tested once the program has been coded. Therefore, software testing stage of the project is dependent upon the completion of the programming.

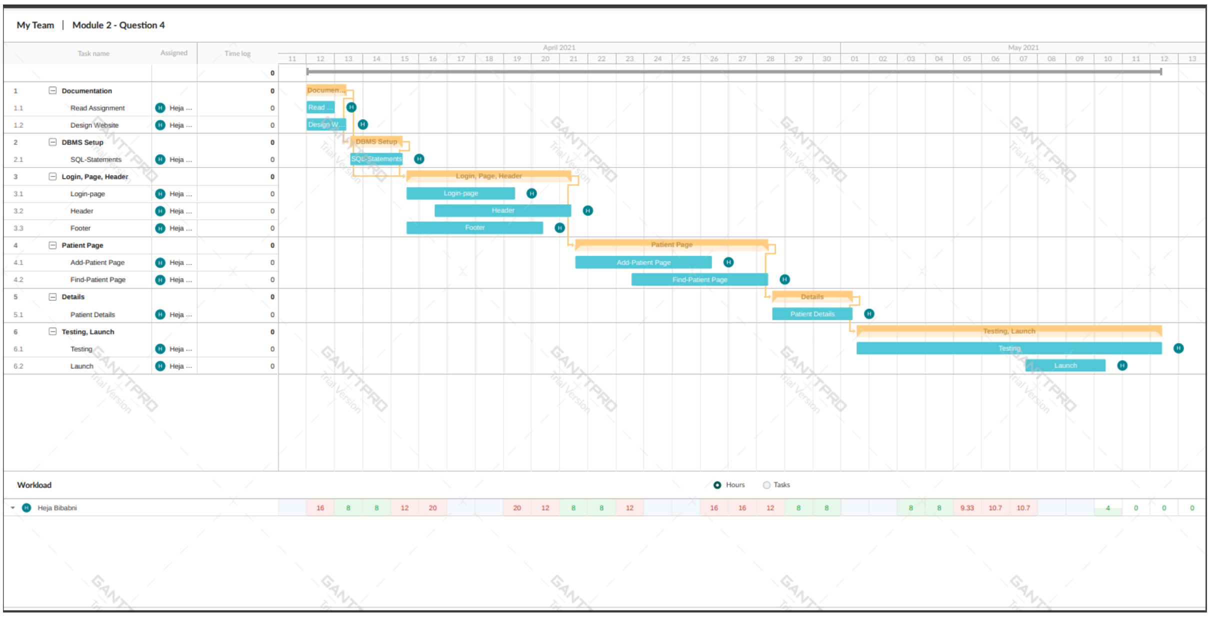
Question 4(a) – Page 131

A Gannt chart is a bar chart that provides a visual way of demonstrating the sequential order of activities (Cadle & Yeates, 2008). You can identify several things from this:

1. When tasks are to be started and finished
2. The sequence or order of the tasks
3. The total time of the project
4. Find overlapping activities and dependencies

A Gannt chart can be modifiable to show dependencies, however, not in a highly organized way (Cadle & Yeates, 2008). These dependencies are not as easily identifiable as a PERT chart. Therefore, Gannt charts are more suited to show the overall sequence of activities rather than to identify dependencies.

Question 4(b)



Question 5(a)

A business case is the justification of the initiative to begin or complete a project (Cadle & Yeates, 2008). Therefore, the business case should be conducted at the very beginning of the project lifecycle (Cadle & Yeates, 2008). The business case is a preliminary investigation that is conducted to determine:

1. If the project meets the business's objectives
2. It is economically feasible

The business case can also determine the relative success of the project by making forecasts of the returns (*Project Management - The Business Case*, n.d.). It can include information such as the options available, cost/benefit analysis, recommendations, and investment appraisals (Cadle & Yeates, 2008). The business can use this information to justify continuing with the project proposal (*Project Management - The Business Case*, n.d.).

Question 5(b)

This depends on the way the organization is structured. The project manager may begin his next assessment after the business case is completed or may participate in the construction of it (Cadle & Yeates, 2008). All businesses are constrained by external economic pressures. It may be cheaper for the company to have the project manager deal with both the business case and the project (Cadle & Yeates, 2008). The project manager may play a big role in constructing the business case or is completely responsible for it (Cadle & Yeates, 2008). In either case, the project manager must at some point provide some input or review the business case.

Question 6(a)

Once the project is initiated its performance must be measured to determine its progress. Reports contain extremely important information that may raise concerns and issues with the project (Cadle & Yeates, 2008). Various things can be learned from the analysis of these reports, including:

1. Your personal contribution
2. Contribution of other members
3. Customer opinions
4. Progress
5. Mistakes and Losses [and learning from them]
6. Opportunities

Reports contain a lot of necessary information but can take an extensive amount of time and effort to finish (Cadle & Yeates, 2008). The frequency of report generation and the time at which they should be generated should be determined at the very beginning of the project (Cadle & Yeates, 2008). This way the project manager could determine how much time and resources will be allocated to this task (Cadle & Yeates, 2008). A system can be implemented such as doing these things in monthly cycles.

Question 6(b)

The reports will be done according to the needs of the stakeholder and therefore different justifications will be needed to produce them (Cadle & Yeates, 2008). The three reports that will be mentioned:

1. Reports to Customer

The customer has invested a large amount of money in the project, and it is an ethical requirement that they must be informed of the project's progress. The nature of this information is vital because they can use this information to form decisions. This will include information such as milestones achieved and the problems that have been encountered (Cadle & Yeates, 2008).

2. Report to IT and business management

Information such as milestones, pitfalls and projected end-date is especially important to the business (Cadle & Yeates, 2008). The business may use this information as means to make alterations to their plans. They can also determine the relative impact it has on the business and whether they should continue (Cadle & Yeates, 2008). Opportunities or threats can be identified with this information and therefore is necessary for business decisions.

3. Reports to the Project team

Reports to the project team are less formal than those of the business management and the customer (Cadle & Yeates, 2008). These reports usually contain information of achievements, quality of the work and long-term benefits (Cadle & Yeates, 2008). The information in these reports can be used to formulate project decisions. The members of the team can also identify which members of the group has worked well. This is particularly important because a manager may be able to recommend a particular team member in the future.

Question 7

An organization's objectives are the things which they want to achieve. This is usually described in a simple sentence. The objectives of an organization lead us to aim of the project (Cadle & Yeates, 2008). Strategy is the means of acquiring an objective (Yuliansyah et al., 2017). A project manager must understand an organization's strategy because it helps them understand what they want to achieve (Cadle & Yeates, 2008). The objectives will also have specific outcomes that can be used to determine if the objective has been achieved. This means you can learn how to measure the projects performance (Yuliansyah et al., 2017). Certain things can be done when measuring performance, for example, the project manager has an opportunity to coach someone if something has gone wrong (Cadle & Yeates, 2008). This can contribute to team development to ensure that it does not happen again.

Question 8

Motivation is the force that pushes a person to do something. Maslow's hierarchy of needs is a pyramid model which is used to describe human motivation which include:

Physiological
This section pertains to the constraints the body places on a person's existence (Cadle & Yeates, 2008). This can include things such as, hunger, sleep, exercise, and sensory pleasure. A person may be motivated to go to work because of the body's requirement to eat.

Safety
This section primarily focuses on safety and security of an individual (Mcleod, 2020). This can include things like freedom from pain or protection from physical attacks. A government official may be motivated to create an organization such as the police (Mcleod, 2020).

Social

These needs are the desires which stem from affection, belonging and enjoying social activities (Mcleod, 2020). A person may be motivated to produce a soccer team because they enjoy socializing with people in their community.

Esteem

Esteem can be divided into the esteem for oneself or the desire to be respected by others (Cadle & Yeates, 2008). An employee may do extra work and motivated to do this to gain prestige or a sense of accomplishment (Mcleod, 2020).

Self-actualization

A person has a potential and this potential is limited by the other constraints that the world places on our existence (Cadle & Yeates, 2008). Self-actualization is the quality of acquiring this potential (Mcleod, 2020). A person may enjoy drawing and does extra work so that they can reach their potential.

Question 9

An organization can benefit from conflict because it can improve productivity (Cadle & Yeates, 2008). Conflicts can transition into personal vendettas that can cause detrimental problems to the project. This may lead to irreversible damage.

The project manager may reduce the destructive effect of conflict by:

a. Managing the conflict by using some method

It was found that a conflict can dissolve very quickly if it is well-managed (Cadle & Yeates, 2008). For example, conflicts can be managed using joint problem solving. The leader or manager will act as the arbitrator that will neutrally consider both sides arguments.

b. Structure of an organization

The design of the organization can significantly increase the incidence of conflicts (Cadle & Yeates, 2008). For example, splitting the organizations functions into separate groups. Therefore, the project manager can reduce the destructive effect of conflict by designing a conflict-free organization (Cadle & Yeates, 2008).

Stress is an emotional trigger that can be used as a source of motivation to meet the project objectives (Cadle & Yeates, 2008). However, the pressure usually builds up at the time the project is to meet a deadline and so is the desire to work. Stress can be generated from multiple sources (Cadle & Yeates, 2008). The source of the stress determines the approach to take to handle it (Bhui et al., 2016). For example, stress may be related to personal organization and time management. A person can handle this by re-organizing his schedule and filing system. In another case, a person may need time off because a loved one passed away.

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