CS 3377 - Assignment 1

Question 1 - The Crash Point

A picture containing object, clock

Description automatically generatedInitial State

|  |  |  |
| --- | --- | --- |
| Project Path | Duration | Critical? |
| A-B-F-G-I | 21 | Yes |
| A-C-D-G-I | 20 |  |
| A-C-D-H-I | 20 |  |
| A-C-E-H-I | 21 | Yes |

Project Duration: 21

Normal Cost $550

Crash Cost $0

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Total Direct Cost $550

Step 1 – Crash G and H by 1 day

These activities provide the least possible cost when crashing.

|  |  |  |
| --- | --- | --- |
| Project Path | Duration | Critical? |
| A-B-F-G-I | 20 | Yes |
| A-C-D-G-I | 19 |  |
| A-C-D-H-I | 19 |  |
| A-C-E-H-I | 20 | Yes |

Project Duration: 20

Normal Cost $550

Crash Cost G - $30

H - $30

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Total Direct Cost $610

Step 2 – Crash B and C by 1 day

Even though other activities would be crashed at the same cost, management would need to review and make the best decision as to which of the activities that are at the same crashing cost would result in the least negative consequence.

|  |  |  |
| --- | --- | --- |
| Project Path | Duration | Critical? |
| A-B-F-G-I | 19 | Yes |
| A-C-D-G-I | 18 |  |
| A-C-D-H-I | 18 |  |
| A-C-E-H-I | 19 | Yes |

Project Duration: 19

Normal Cost $610

Crash Cost B - $40

C - $40

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Total Direct Cost $690

Step 3 – Crash F and E by 1 day

|  |  |  |
| --- | --- | --- |
| Project Path | Duration | Critical? |
| A-B-F-G-I | 18 | Yes |
| A-C-D-G-I | 18 | Yes |
| A-C-D-H-I | 18 | Yes |
| A-C-E-H-I | 18 | Yes |

Project Duration: 18

Normal Cost $690

Crash Cost F - $40

E - $40

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Total Direct Cost $770

Step 3 – Crash B,D and E by 1 day

|  |  |  |
| --- | --- | --- |
| Project Path | Duration | Critical? |
| A-B-F-G-I | 17 | Yes |
| A-C-D-G-I | 17 | Yes |
| A-C-D-H-I | 17 | Yes |
| A-C-E-H-I | 17 | Yes |

Project Duration: 17

Normal Cost $770

Crash Cost B - $40

D - $40

E - $40

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Total Direct Cost $890

The network cannot be further reduced more than a duration of 17 units, therefore the crash point is $890.

Question 2 – Understanding Project Time compression

For each of the following short answer questions, limit your response to ¼ page per answer.

1. What are the 5 common reasons for crashing a project?
2. Initial projects may have been too optimistic
3. Market towards the projects needs to be changed
4. Project in demand earlier than anticipated
5. Project has fallen considerably behind schedule
6. Realizing benefits from contractual agreement
7. What are the advantages and disadvantages of reducing project scope to accelerate a project? What can be done to reduce the disadvantages?

Project scope relates to the work content and products of a project. Scaling down the scope of a project would therefore require cutting certain tasks. By doing so, there is lots of room for saving both time and cost in a project. On the other hand, you are risking losing value needed for the project to reach success. In order to reduce scope without hurting the project is to reexamine every aspect and determine whether it is necessary and adds to the value of the project. Conducting this assessment will result in the optimal project with maximal efficiency.

1. Why is scheduling overtime a popular choice for getting projects back on schedule? What are the potential problems for relying on this option?

Scheduling overtime is a popular choice due to no extra costs being added to a project due to it involving salary workers. It also avoids Brook’s Law, which states that adding manpower late to a software project makes it later, and also avoids any costs related to coordination and training. By relying on overtime, problems such as fatigue and stress. Research has shown that companies that expected an excessive amount of overtime from their employees showed a decrease in marginal performance from them.

1. Identify 4 indirect costs you might find on a moderately complex project. Why are these costs classified as “indirect”?

Indirect costs are classified as work that cannot be directly associated with particular work or activity. For moderately complex work, this could include:

1. Administration
2. Supervision
3. Consultants
4. Interest
5. How can a cost-duration graph be used by the project manager? Explain.

A cost-duration graph is constructed by gathering all direct and direct costs for a certain duration of the project. Indirect costs are incurred for the life of the project so any reduction in time will be a reduction in indirect costs. This is a method by which a project manager can use to analyze the cost of reducing project time compared to the benefit gained from completing the project sooner.

1. Reducing the project duration increases the risk of being late. Explain.

Reducing project duration increases risk of being late because timeline of noncritical activities is reducing therefore new critical paths may be created. Increasing the number of critical paths may increase risk of project being late.

1. It is possible to shorten the critical path and save money. Explain how.

If a large percentage of a projects’ total costs are indirect costs, it is possible to save money by shortening the critical path. By shortening the critical path, the project duration is shortened and therefore the cost of the project is reduced.