**Critical Path Analysis**

**Grand Designs**

**Problem:**

A property developer wishes to renovate a house. To keep his costs to a minimum he likes to have only one worker working on each activity. The property renovation involves various tasks which he estimates will take one worker the times shown in the table below:

|  |  |
| --- | --- |
| **Activity** | **Time needed to complete** |
| Substantial repairs to the roof | 8 days |
| Internal structural work | 4 days |
| Electrical work | 7 days |
| Plumbing | 6 days |
| Installing a new kitchen | 3 days |
| Installing a new bathroom | 4 days |
| Garden | 5 days |
| Plastering | 4 days |
| Internal decoration | 5 days |
| Fitting carpets | 1 day |
| Outside paintwork | 5 days |

The roof and structural work must be completed before any other activities (inside or outside) can commence. Once these are done, the external jobs can happen at any stage. However, inside the house, the plumbing and electrics must be completed before the plastering can be done. The plastering must be complete before the new kitchen and bathroom can be installed. Decoration can only happen once the kitchen and bathroom are in place, and carpets can only be fitted after decorating.

The property developer knows that to keep his budget on target, all work needs to be completed in 6 weeks. His team only works from Monday to Friday. Can it be done? Which activities is it most important for the property developer to keep on track?

The developer has several other projects on the go at the same time and decides that he can only spare two of his team to work on this project. By assigning activities to Worker 1 and Worker 2 show how this is possible.

With 3 workers, can the project be done in 19 days? What are your comments?