Project Breakdown
Construction stages can be broken down into many operations that define the major elements to be performed.

The Single Relationship
- Finish-to-start relationship
- Each activity must be selected so that all the previously required activities must be completed before the chosen one can begin and all the following activities cannot be started until the chosen one is complete.
Activity Definition

- An activity is a unique unit of the project which can be described within prescribed limits of time

Dummy Activities

An activity having a zero duration used:

1. To establish proper logic
2. To maintain the numbering system
3. To mark milestones
Activity sequencing needs to take into account the relationships between activities. There are four types of relationships that need to be taken into account.

- **Physical**

  Exists between two (or more) activities when one cannot start until another is partially or totally complete (i.e. cannot pour footings until they have been formed)
DEVELOP ACTIVITY SEQUENCE (cont.)

- Safety
  Exists when simultaneous performance of two activities can result in a safety hazard (i.e. in multi-story construction it is at times unsafe for crews to be working under another.)

- Resource
  Due to limited resource availability, two activities may not be able to use a resource at the same time (i.e. A crane cannot be used for both pouring walls and erecting steel.)

- Preferential
  How the contractor wishes certain activities to be sequenced
TYPES OF ACTIVITIES

1. Production Activities
   Those that can be taken directly from plans and specifications

2. Procurement Activities
   Procurement of material and equipment

3. Management Decision Activities
   Activities that can be created by management to avoid certain situations
   - Delay Concrete
   - Company Vacation
   - Deer Hunting
Initial Activity List - Remodeling Chemical Laboratory

- Activity list
  - Strip room
  - Repair floor
  - Lay vinyl floor
  - Rough-in plumbing and electrical
  - Finish plumbing and electrical
  - Replace existing fume duct
  - Install new fume hood
  - Install base cabinets
  - Install wall cabinets
  - Install chemical sink
  - Paint cabinets
  - Paint walls and ceiling

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Preliminary Activity List - Remodeling Chemical Laboratory

- Strip room
- repair walls and ceilings
- Repair floor
- lay vinyl floor
- rough-in plumbing and electrical
- finish plumbing and electrical
- replace existing fume duct
- install new fume hood
- install base cabinets
- install wall cabinets
- install chemical sink
- paint cabinets
- paint walls and ceiling
- obtain vinyl floor covering
- obtain cabinets
- obtain fume hood
- obtain chemical sink
- painter availability
<table>
<thead>
<tr>
<th>No.</th>
<th>Activity list</th>
<th>Depends Upon</th>
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<tbody>
<tr>
<td>1</td>
<td>Strip room</td>
<td>—</td>
</tr>
<tr>
<td>2</td>
<td>Repair walls and ceilings</td>
<td>1,5,7</td>
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<tr>
<td>3</td>
<td>Repair floor</td>
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<td>5</td>
<td>Rough-in plumbing and electrical</td>
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<tr>
<td>6</td>
<td>Finish plumbing and electrical</td>
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<td>7</td>
<td>Replace existing fume duct</td>
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<td>8</td>
<td>Install new fume hood</td>
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<td>9</td>
<td>Install base cabinets</td>
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<td>10</td>
<td>Install wall cabinets</td>
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<td>11</td>
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<td>13</td>
<td>Paint walls and ceiling</td>
<td>2,3,6,8,9,10,18</td>
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<td>14</td>
<td>Obtain vinyl floor covering</td>
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<td>15</td>
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<td>16</td>
<td>Obtain fume hood</td>
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<td>17</td>
<td>Obtain chemical sink</td>
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<tr>
<td>18</td>
<td>Painter availability</td>
<td>—</td>
</tr>
<tr>
<td>19</td>
<td>Install 2/3 base cabinets</td>
<td>2,3,9,15</td>
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