

1. Build a GANTT Chart from the WBS (list of tasks) and display the Critical Path . You will define when necessary: Tasks / Phases / Milestones

- General rules to follow :

- Project start on Monday 06APR20

- We have some constraints :

- Wait 5 days between carpentry and roof $\rightarrow Lag = wait\ time$

- Water tightness may start 10 days before end of walls building → *Lead = Acceleration time*

- Carpentry must start when Wall building is completed

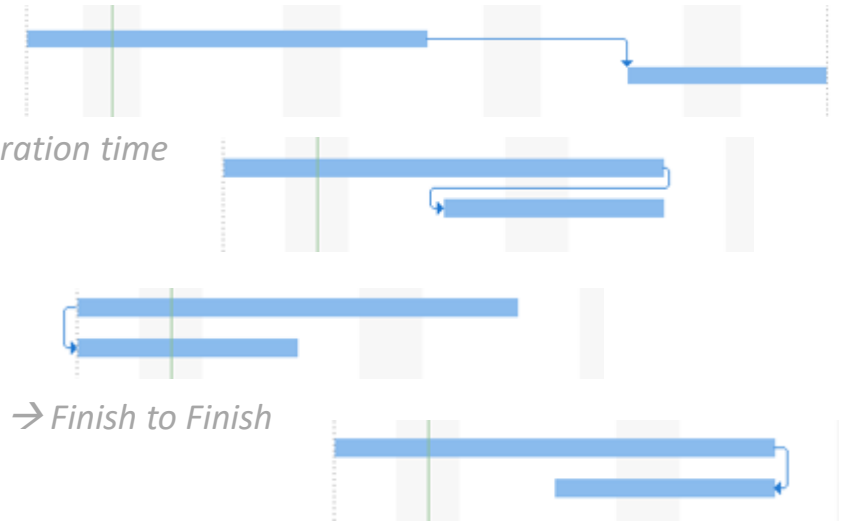
- Electricity and Plumbing are starting in parallel → *Start-to-start*

- Quality controls tasks must end at the same time as the last activity of its phase → *Finish to Finish*

- Garden can start when Shell Phase is completed

- Days off : Monday 13APR20 / Friday 01MAY20 / Friday 08MAY20 / Thursday 21MAY20 / Monday 01JUNE20 / Tuesday 14JULY20 / Saturday 15AUG20

- One working week : 35 hours / from Monday to Friday / each day is 7h (8AM to noon / 2PM to 5PM)



2. Using information of Gantt and financial data, respect that :

- Total budget not to exceed **150000** euros

- Total duration not to exceed **70 working days**

Comments :

- There is a 10000e penalty for any additional working days delay

- You can negotiate additional resources – only on Wall builders to minimize the risk of delay

Phases	Tasks	Resources	Effort People / days	Equipment / costs
House	Start	None (Milestones)	0	0
Foundations	Earthwork (terrassement)	Earth Worker	5	500
Foundations	Foundation	Foundation builder	4	2000
Foundations	Quality control #1	Expert	1	200
Shell	Walls building	Wall builder	80	10000
Shell	Water tightness (Étanchéité à l'eau)	Specialist	15	2000
Shell	Carpentry (Charpente)	Carpenter	12	3500
Shell	Roof installation	Carpenter	6	3000
Shell	Quality control #2	Expert	2	200
2 nd level Shell	Plumbing	Plumber	8	3000
2 nd level Shell	Electricity	Electrician	5	1500
2 nd level Shell	Quality control #3	Expert	1	200
Paintings	Painting – inside	Painter	8	1000
Paintings	Painting - outside	Painter	4	200
Gardening	Garden setting	Gardener	10	4000
House	Final Control	Expert	2	1000

Resources	Quantity	Cost /hour
Carpenter	1	96
Water tightness Specialist	1	115
Electrician	1	128
Gardener	0.5	60
Earth Worker	1	150
Foundation builder	2	150
Wall builder	4	85
Plumber	1	128
Painter	1	85
Expert	1	200

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- Carpentry must start when Wall building is completed
- Electricity and Plumbing are starting in parallel → Start-to-start
- Quality controls tasks must end at the same time as the last activity of its phase → Finish to Finish
- Garden can start when Shell Phase is completed