Master LSCM

Course 2022-2023

Subject:

Project Management Practices

Practice 2:

Creating a project with Microsoft Project

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Escola Tècnica Superior d'Enginyeria
Universitat Autònoma de Barcelona

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Introduction

In this practice the creation of a new project with Microsoft Project is performed. The project consists of the development and implementation of a system that recognizes automatically handwritten documents. The resources and appropriate tasks will be defined and possible problems that may occur will be validated and corrected.

Method

Note: The names of menus, options, tabs, etc., are in *italics*. In **bold** are marked the significant stages or relevant information in the planning process. Before starting work we will ensure that the redistribution of resources is assigned to manual (menu: *File/Options (Archivo/Opciones)*, option: *Schedule/New tasks created:/ Auto scheduled (Programación/ Opciones de programación de este Proyecto/ Nuevas tareas creadas: programada automáticamente)*).

1. Creation of the project

Introduce the project dates in Microsoft Project:
Start of the project: 5th December 2022 (the tasks are programmed to start from this date): Tab *Project→ Project Information/ Start date* (*Proyecto / Información del Proyecto / Fecha de comienzo)*.

Resources:

In order to define the resources *click* on the button that shows the tab *Vista/ Resource Sheet (Hoja de recursos),* or select in the menu *Tarea (Task)* the option *Resource Sheet (Hoja de recursos).* A table will show up, where different tasks with their associated data can be added. For example the identification name, the working capacity (percentage of dedication to the project), the cost, the price of extra working hours and the working schedule of the resource etc. can be added. In our example we add the following resources:

Resource Name (Nombre del Recurso)	Maximum Capacity (Capacidad màxima)	Standard Rate (Tasa estandar)	Accrue at (Acumular)
Project Manager	200%	70 €/h	Prorated (prorrateo)
Chief Technology Officer	100%	65 €/h	Prorated (prorrateo)
Senior Programmer	200%	60 €/h	Prorated (prorrateo)
Software Engineer	200%	50 €/h	Prorated (prorrateo)
Software Developer	200%	55 €/h	Prorated (prorrateo)
Hardware Engineer	100%	45 €/h	Prorated (prorrateo)

Quality Assurance Engineer	100%	40 €/h	Prorated (prorrateo)
Operators	200%	25 €/h	Prorated (prorrateo)

Table 1. Resources of the project

Establish a working schedule (*Proyecto/ Cambiar tiempo de trabajo*) where:

- The workday is 8 hours long. The schedule of the workforce is from 9:00am to 13:00pm and from 16:00pm to 20:00pm.

- The following days are holidays:
  - 24 December 2022 to 7 January 2023
  - 20 February 2023 to 24 February 2023
  - 15 March 2023,25 March 2023
  - 17 April 2023 to 25 April 2023
  - 10 June 2023 to 15 June 2023

From the view of the *Resource sheet (Hoja de recursos)* the working schedule of the resource can be changed and individualized. In order to do so, *double click* on the desired resource. A dialog box with the name *Resource information (Información del recurso)* will show up. From the *General* tab of this dialog you can modify all resource data. In our example we click on the button *Change working time (Cambiar calendario laboral),* and assign the 9th of January 2023 as a holiday for the commercial and inter workers.

Tasks:

In order to introduce tasks in Microsoft project go to the tab *Gantt Chart (Vista/ Diagrama de Gantt)* and click on the corresponding button or select the menu *View* (*Vista*) and the option *Gantt Chart (Diagrama de Gantt).* As it follows, a table shows up where the information of each task can be added. The easiest way to add the tasks is to double click on a line in the table and automatically the dialog box *Summary task information (Información de tarea)* will show up.

In the dialog box we add the information of the tasks (duration, the resource consumption – with the corresponding percentages of time that dedicates every resource, and the precedence relationship. In order to indicate the precedence and the information related to the resources, we use the tab *Predecessors* and *Resources (Predecesoras* and *Recursos).* When entering the precedence relations between tasks, you can set yp diferent type bonds like: *Finish-Start (Final-Comienzo), Start-Start (Comienzo-Comienzo), Finish-Finish (Final-Final), Start-Finish (Comienzo-Final).*

In Table 2 is described how to introduce the tasks in order to continue with the creation of the project. In order to add the durations of the tasks or the

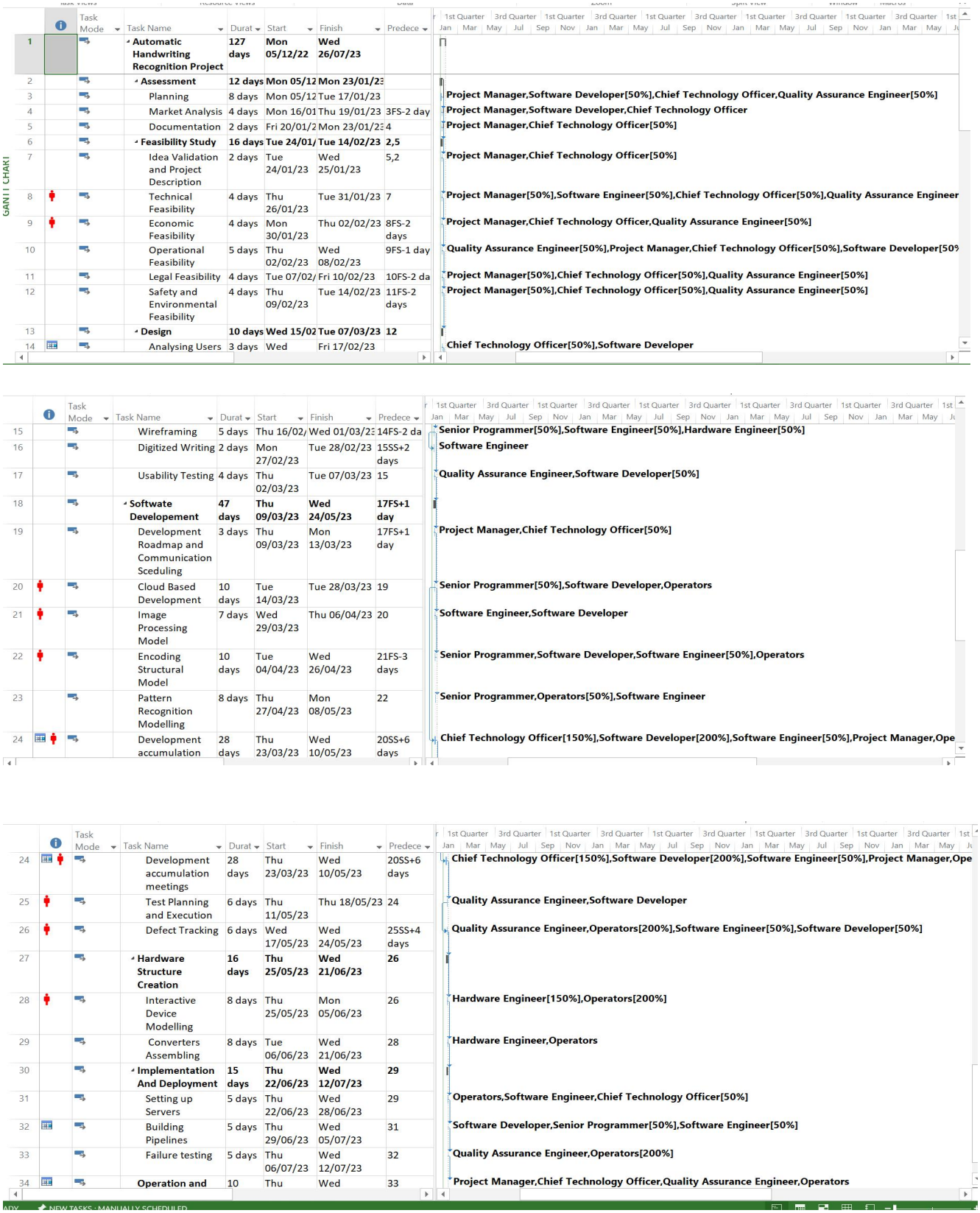
precedence relationships you can either use days or hours by indicating a "d" or "h" after the numbers.

In order to indicate hierarchical relationships between  tasks, use the buttons at the tab *Task (Tarea):*

Introduce the **tasks** of the project with the corresponding **duration, association of the resources** and **precedence relations**, as it is shown in the Table 2. Please, note, that durations of activities are calculated automatically, depending on the durations of its tasks.

Manually: *Double click* on a task in the *Gantt Chart (Diagrama de Gantt)* to open the dialog box *Task Information (Información de tarea).* With the tab *Resource* (*Recursos*) we can add all resources that are necessary to accomplish the tasks. Afterwards we *click* on *Accept (Aceptar).* Microsoft Project thus saves the associated work of the task constantly, changing the other variables when necessary.

Automatically*:* Upload the file Tasks2.xls (English or Spanish version) (in Virtual Campus) to generate the task list automatically. Please, establish the WBS (Working Breakdown Structure) as it is seen on Table 2.



	Task Mode	Task Name	Durat	Start	Finish	Predece	Resource Names
1		**Automatic Handwriting Recognition Project**	**127 days**	**Mon 05/12/22**	**Wed 26/07/23**		
2		**Assessment**	**12 days**	**Mon 05/12**	**Mon 23/01/23**		
3		Planning	8 days	Mon 05/12	Tue 17/01/23		Project Manager,Software Developer[50%],Chief Technology Officer,Quality Assurance Engineer[50%]
4		Market Analysis	4 days	Mon 16/01	Thu 19/01/23	3FS-2 day	Project Manager,Software Developer,Chief Technology Officer
5		Documentation	2 days	Fri 20/01/2	Mon 23/01/23	4	Project Manager,Chief Technology Officer[50%]
6		**Feasibility Study**	**16 days**	**Tue 24/01/**	**Tue 14/02/23**	**2,5**	
7		Idea Validation and Project Description	2 days	Tue 24/01/23	Wed 25/01/23	5,2	Project Manager,Chief Technology Officer[50%]
8		Technical Feasibility	4 days	Thu 26/01/23	Tue 31/01/23	7	Project Manager[50%],Software Engineer[50%],Chief Technology Officer[50%],Quality Assurance Engineer
9		Economic Feasibility	4 days	Mon 30/01/23	Thu 02/02/23	8FS-2 days	Project Manager,Chief Technology Officer,Quality Assurance Engineer[50%]
10		Operational Feasibility	5 days	Thu 02/02/23	Wed 08/02/23	9FS-1 day	Quality Assurance Engineer[50%],Project Manager,Chief Technology Officer[50%],Software Developer[50%
11		Legal Feasibility	4 days	Tue 07/02/	Fri 10/02/23	10FS-2 da	Project Manager[50%],Chief Technology Officer[50%],Quality Assurance Engineer[50%]
12		Safety and Environmental Feasibility	4 days	Thu 09/02/23	Tue 14/02/23	11FS-2 days	Project Manager[50%],Chief Technology Officer[50%],Quality Assurance Engineer[50%]
13		**Design**	**10 days**	**Wed 15/02**	**Tue 07/03/23**	**12**	
14		Analysing Users	3 days	Wed	Fri 17/02/23		Chief Technology Officer[50%],Software Developer
15		Wireframing	5 days	Thu 16/02/	Wed 01/03/23	14FS-2 da	Senior Programmer[50%],Software Engineer[50%],Hardware Engineer[50%]
16		Digitized Writing	2 days	Mon 27/02/23	Tue 28/02/23	15SS+2 days	Software Engineer
17		Usability Testing	4 days	Thu 02/03/23	Tue 07/03/23	15	Quality Assurance Engineer,Software Developer[50%]
18		**Softwate Developement**	**47 days**	**Thu 09/03/23**	**Wed 24/05/23**	**17FS+1 day**	
19		Development Roadmap and Communication Sceduling	3 days	Thu 09/03/23	Mon 13/03/23	17FS+1 day	Project Manager,Chief Technology Officer[50%]
20		Cloud Based Development	10 days	Tue 14/03/23	Tue 28/03/23	19	Senior Programmer[50%],Software Developer,Operators
21		Image Processing Model	7 days	Wed 29/03/23	Thu 06/04/23	20	Software Engineer,Software Developer
22		Encoding Structural Model	10 days	Tue 04/04/23	Wed 26/04/23	21FS-3 days	Senior Programmer,Software Developer,Software Engineer[50%],Operators
23		Pattern Recognition Modelling	8 days	Thu 27/04/23	Mon 08/05/23	22	Senior Programmer,Operators[50%],Software Engineer
24		Development accumulation	28 days	Thu 23/03/23	Wed 10/05/23	20SS+6 days	Chief Technology Officer[150%],Software Developer[200%],Software Engineer[50%],Project Manager,Ope
24		Development accumulation meetings	28 days	Thu 23/03/23	Wed 10/05/23	20SS+6 days	Chief Technology Officer[150%],Software Developer[200%],Software Engineer[50%],Project Manager,Ope
25		Test Planning and Execution	6 days	Thu 11/05/23	Thu 18/05/23	24	Quality Assurance Engineer,Software Developer
26		Defect Tracking	6 days	Wed 17/05/23	Wed 24/05/23	25SS+4 days	Quality Assurance Engineer,Operators[200%],Software Engineer[50%],Software Developer[50%]
27		**Hardware Structure Creation**	**16 days**	**Thu 25/05/23**	**Wed 21/06/23**	**26**	
28		Interactive Device Modelling	8 days	Thu 25/05/23	Mon 05/06/23	26	Hardware Engineer[150%],Operators[200%]
29		Converters Assembling	8 days	Tue 06/06/23	Wed 21/06/23	28	Hardware Engineer,Operators
30		**Implementation And Deployment**	**15 days**	**Thu 22/06/23**	**Wed 12/07/23**	**29**	
31		Setting up Servers	5 days	Thu 22/06/23	Wed 28/06/23	29	Operators,Software Engineer,Chief Technology Officer[50%]
32		Building Pipelines	5 days	Thu 29/06/23	Wed 05/07/23	31	Software Developer,Senior Programmer[50%],Software Engineer[50%]
33		Failure testing	5 days	Thu 06/07/23	Wed 12/07/23	32	Quality Assurance Engineer,Operators[200%]
34		**Operation and**	10	Thu	Wed	33	Project Manager,Chief Technology Officer,Quality Assurance Engineer,Operators

Table 2. Activities and Tasks of the Project

2. Questions

1. Indicate the date of project completion, and the time required to finish it:

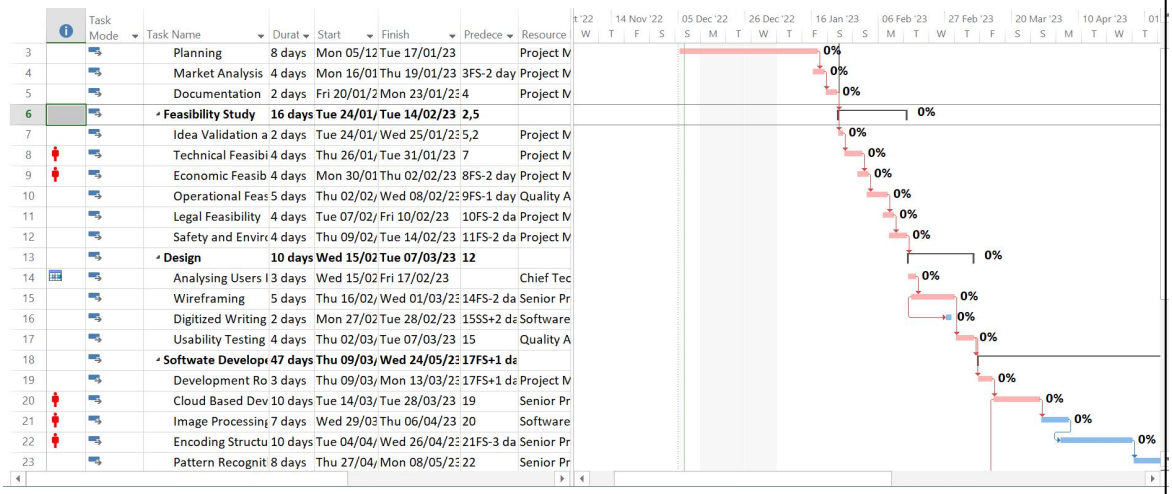
Completion day is : 26/07/2023
Time requested to finish would be in 127 days

2. Indicate the total cost of the project:

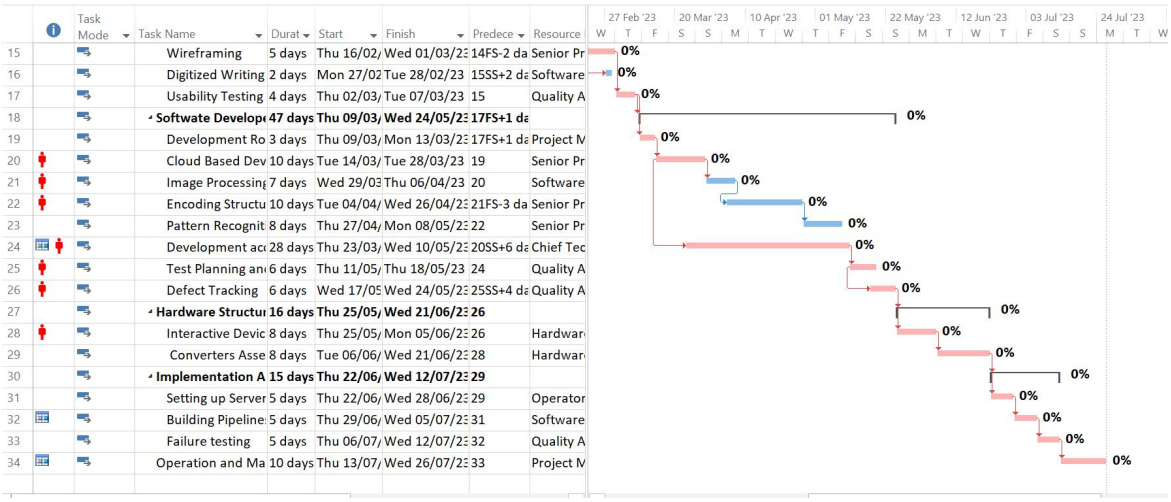
TIC (Total Investment Cost) = 176,640 €

3. Identify the tasks that from the critical path:

Attach the draw providing this information



	Task Mode	Task Name	Durat	Start	Finish	Predece	Resource
3		Planning	8 days	Mon 05/12	Tue 17/01/23		Project M
4		Market Analysis	4 days	Mon 16/01	Thu 19/01/23	3FS-2 day	Project M
5		Documentation	2 days	Fri 20/01/2	Mon 23/01/23	4	Project M
6		**Feasibility Study**	**16 days**	**Tue 24/01/**	**Tue 14/02/23**	**2,5**	
7		Idea Validation a	2 days	Tue 24/01/	Wed 25/01/23	5,2	Project M
8		Technical Feasibi	4 days	Thu 26/01/	Tue 31/01/23	7	Project M
9		Economic Feasib	4 days	Mon 30/01	Thu 02/02/23	8FS-2 day	Project M
10		Operational Feas	5 days	Thu 02/02/	Wed 08/02/23	9FS-1 day	Quality A
11		Legal Feasibility	4 days	Tue 07/02/	Fri 10/02/23	10FS-2 da	Project M
12		Safety and Envir	4 days	Thu 09/02/	Tue 14/02/23	11FS-2 da	Project M
13		**Design**	**10 days**	**Wed 15/02**	**Tue 07/03/23**	**12**	
14		Analysing Users I	3 days	Wed 15/02	Fri 17/02/23		Chief Tec
15		Wireframing	5 days	Thu 16/02/	Wed 01/03/23	14FS-2 da	Senior Pr
16		Digitized Writing	2 days	Mon 27/02	Tue 28/02/23	15SS+2 da	Software
17		Usability Testing	4 days	Thu 02/03/	Tue 07/03/23	15	Quality A
18		**Softwate Develop**	**47 days**	**Thu 09/03/**	**Wed 24/05/23**	**17FS+1 da**	
19		Development Ro	3 days	Thu 09/03/	Mon 13/03/23	17FS+1 da	Project M
20		Cloud Based Dev	10 days	Tue 14/03/	Tue 28/03/23	19	Senior Pr
21		Image Processin	7 days	Wed 29/03	Thu 06/04/23	20	Software
22		Encoding Structu	10 days	Tue 04/04/	Wed 26/04/23	21FS-3 da	Senior Pr
23		Pattern Recognit	8 days	Thu 27/04/	Mon 08/05/23	22	Senior Pr



	Task Mode	Task Name	Durat	Start	Finish	Predece	Resource
15		Wireframing	5 days	Thu 16/02/	Wed 01/03/2	14FS-2 da	Senior Pr
16		Digitized Writing	2 days	Mon 27/02	Tue 28/02/23	15SS+2 da	Software
17		Usability Testing	4 days	Thu 02/03/	Tue 07/03/23	15	Quality A
18		**Softwate Develop**	**47 days**	**Thu 09/03/**	**Wed 24/05/2**	**17FS+1 da**	
19		Development Ro	3 days	Thu 09/03/	Mon 13/03/2	17FS+1 da	Project M
20		Cloud Based Dev	10 days	Tue 14/03/	Tue 28/03/23	19	Senior Pr
21		Image Processing	7 days	Wed 29/03	Thu 06/04/23	20	Software
22		Encoding Structu	10 days	Tue 04/04/	Wed 26/04/2	21FS-3 da	Senior Pr
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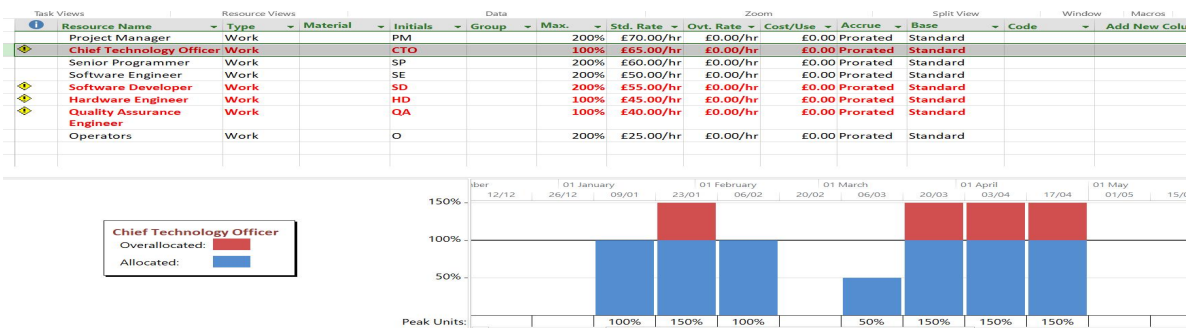
24		Development ac	28 days	Thu 23/03/	Wed 10/05/2	20SS+6 da	Chief Tec
25		Test Planning an	6 days	Thu 11/05/	Thu 18/05/23	24	Quality A
26		Defect Tracking	6 days	Wed 17/05	Wed 24/05/2	25SS+4 da	Quality A
27		**Hardware Structu**	**16 days**	**Thu 25/05/**	**Wed 21/06/2**	**26**	
28		Interactive Devic	8 days	Thu 25/05/	Mon 05/06/2	26	Hardwar
29		Converters Asse	8 days	Tue 06/06/	Wed 21/06/2	28	Hardwar
30		**Implementation A**	**15 days**	**Thu 22/06/**	**Wed 12/07/2**	**29**	
31		Setting up Server	5 days	Thu 22/06/	Wed 28/06/2	29	Operator
32		Building Pipeline	5 days	Thu 29/06/	Wed 05/07/2	31	Software
33		Failure testing	5 days	Thu 06/07/	Wed 12/07/2	32	Quality A
34		Operation and Ma	10 days	Thu 13/07/	Wed 26/07/2	33	Project M

4. **Indicate which resources have a problem with over allocation:**

- Chief Technology Officer
- Software Developer
- Hardware Engineer
- Quality Assurance Engineer

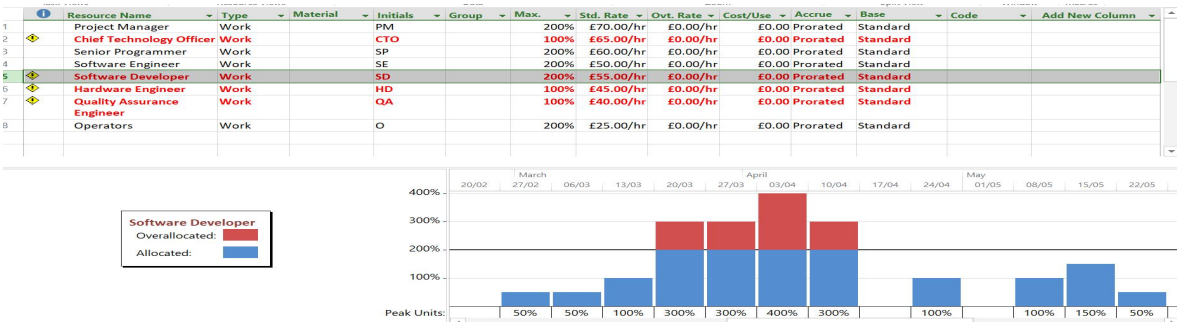
5. **Identify the problems of over allocation** with the help of a combined view of the *Gantt Chart (Diagramma de Gantt)* and the *Resource graph (Gráfico de recursos)* – right *click* on the empty field and select *Show split (Dividir)* and for the lower window select the view *Resource Graph (Gráfico de recursos).*

- Over allocation of Chief Technology Officer

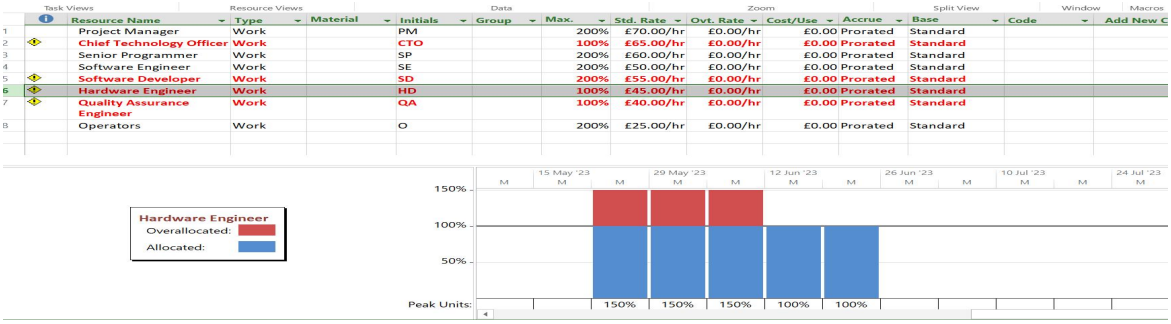


	Resource Name	Type	Material	Initials	Group	Max.	Std. Rate	Ovt. Rate	Cost/Use	Accrue	Base	Code	Add New Colu
	Project Manager	Work		PM		200%	£70.00/hr	£0.00/hr	£0.00	Prorated	Standard		
	Chief Technology Officer	Work		CTO		100%	£65.00/hr	£0.00/hr	£0.00	Prorated	Standard		
	Senior Programmer	Work		SP		200%	£60.00/hr	£0.00/hr	£0.00	Prorated	Standard		
	Software Engineer	Work		SE		200%	£50.00/hr	£0.00/hr	£0.00	Prorated	Standard		
	Software Developer	Work		SD		200%	£55.00/hr	£0.00/hr	£0.00	Prorated	Standard		
	Hardware Engineer	Work		HD		100%	£45.00/hr	£0.00/hr	£0.00	Prorated	Standard		
	Quality Assurance Engineer	Work		QA		100%	£40.00/hr	£0.00/hr	£0.00	Prorated	Standard		
	Operators	Work		O		200%	£25.00/hr	£0.00/hr	£0.00	Prorated	Standard		

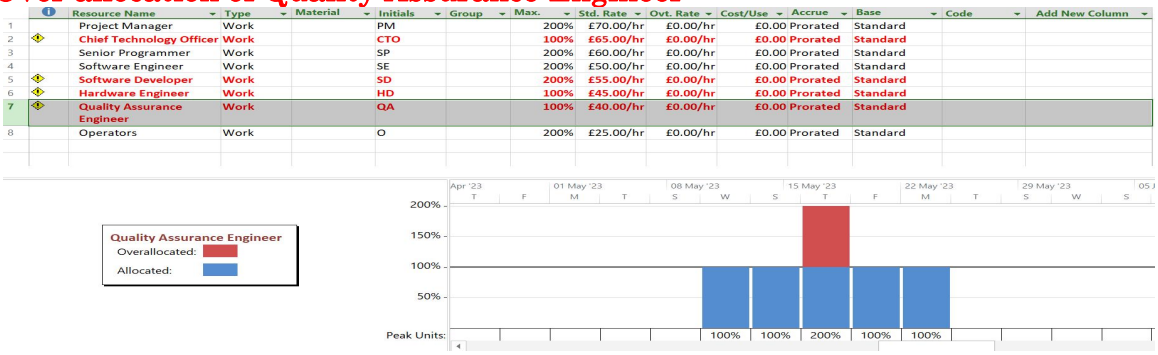
- Over allocation of Software Developer



- Over allocation of Hardware Developer



- Over allocation of Quality Assurance Engineer



6. **Propose two ways to solve the problems for over allocation, in such a manner that the duration of the project should not be extended:**

- One way is to increase the resources having over allocation, which doesn't have impact on final project Schedule

- The other option is to click on at resource label,which redistributes automatically the affected resource without impacting on final project schedule

7. Indicate which is the most expensive elementary task and which are the costs of every resource in the entire project:

Most Expensive Task: -Development Accumulation Meetings: 45,920 €

Resource Costs:

Resource Name	Cost
Project Manager	£27,720.00
Chief Technology Officer	**£33,280.00**
Senior Programmer	£13,440.00
Software Engineer	£20,400.00
Software Developer	**£37,180.00**
Hardware Engineer	**£8,100.00**
Quality Assurance Engineer	**£13,920.00**
Operators	£22,600.00

8. For how many days will the project be delayed if we solve all the conflicts of resource over allocation?

The project will be delayed 4 days,from 26/07/23 to 31/07/23

9. What do we indicate when we put the maximum capacity (*Capacidad Maxima*) of the Chief Technology Officer to 150%? And what, when we put the capacity of the Hardware engineer to 200%?

We put maximum capacity of CTO ,from 100% to 150% ,because CTO was assigned at more than the resouce maximum units to the task "Development Accumulation Meeting",so we increases the resource availability of "CTO" to solve the overallocation issue.

We put maximum capacity of HE ,from 100% to 200% ,because HE was assigned at more than the resouce maximum units to the task "Interactive Device Installation",so we increases the resource availability of "HE" to solve the overallocation issue.