

**Tribhuvan University
Institute of Science and Technology
Patan Multiple Campus**



**LAB REPORT ON
SOFTWARE PROJECT MANAGEMENT(BIT402)**

*A partial fulfillment of the requirements for Bachelors in Information
Technology(BIT)*

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BIT 7th Semester
Exam Roll No. : 604
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Lab Sheet-1: Explain following common methods for comparing projects on the basis of their cash flow forecasts.

- Net profit
- Payback period
- Return on investment
- Net present value
- Internal rate of return

- a) Calculate the Net Profit, Payback period, Return on investment (ROI) and Internal rate of return (IRR) for each of the other projects shown in Table below and decide which, on the basis of this criterion, is the most worthwhile.

Year	Project 1	Project 2	Project 3	Project 4
0	-100,000.00	1,000,000.00	-100,000.00	-120,000.00
1	10,000.00	200,000.00	30,000.00	30,000.00
2	10,000.00	200,000.00	30,000.00	30,000.00
3	10,000.00	200,000.00	30,000.00	30,000.00
4	20,000.00	200,000.00	30,000.00	30,000.00
5	100,000.00	300,000.00	30,000.00	75,000.00
Net profit	50,000.00	100,000.00	50,000.00	75,000.00
Payback Period				
Return on Investment (%)				
NPV	620.92	-179,750.5	13,723.6	21,665.1
Internal rate of return	10.166%	3.073%	15.238%	15.893%

- b) Calculate the Net Present Value(NPV) for each of the projects A, B and C shown in Table below using each of the discount rates 8%, 10% and 12%.

Year	Project A (Rs)	Project BA (Rs)	Project C (Rs)
0	-8,000	-8,000	-10,000
1	4,000	1,000	2,000
2	4,000	2,000	2,000
3	2,000	4,000	6,000
4	1,000	3,000	2,000
5	500	9,000	2,000
6	500	-6,000	2,000
Net profit	4,000	5,000	6,000
Net Present Value(NPV) 8%			
Net Present Value(NPV) 10%			
Net Present Value(NPV) 12%			

Lab Sheet-2: Software Effort Estimation Techniques

- Explain Albrecht Function Point Analysis
- Explain Function Points Mark II
- Explain COSMIC Full Function Points

What is Functional Point in software engineering?

- Albrecht Function Point Analysis** – Given the following values, calculate the Functional Point when complexity adjustment factors are significantly complex product and weighting factors are high.

User input	55
User Output	35
User Enquires	40
User Files	8
External Interfaces	5

Note : See the slides.

- COCOMO (CONstructive COst MODEL)** – Consider a software project using semi-detached mode with 30,000 lines of code. Calculate the Effort estimation , Duration estimation and Person estimation of the project.

Software Projects	a ₁	a ₂	b ₁	b ₂
Organic	2.4	1.05	2.5	0.38
Semi-Detached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

$$\text{Effort} = a_1 \times (\text{KLOC})^{a_2} \text{ PM}$$

$$\text{Duration (T}_{\text{dev}}) = b_1 \times (\text{Effort})^{b_2} \text{ Months}$$

Where

- KLOC is the estimated number of delivered lines (expressed in thousands) of code for project, estimated size of software product
- The coefficients a₁, a, b₁ are b₂ are constants for each category of software products.
- T_{dev} is the estimated time to develop the software, in months.
- Effort is the total efforts required to develop the software product, expressed in person months(PM)

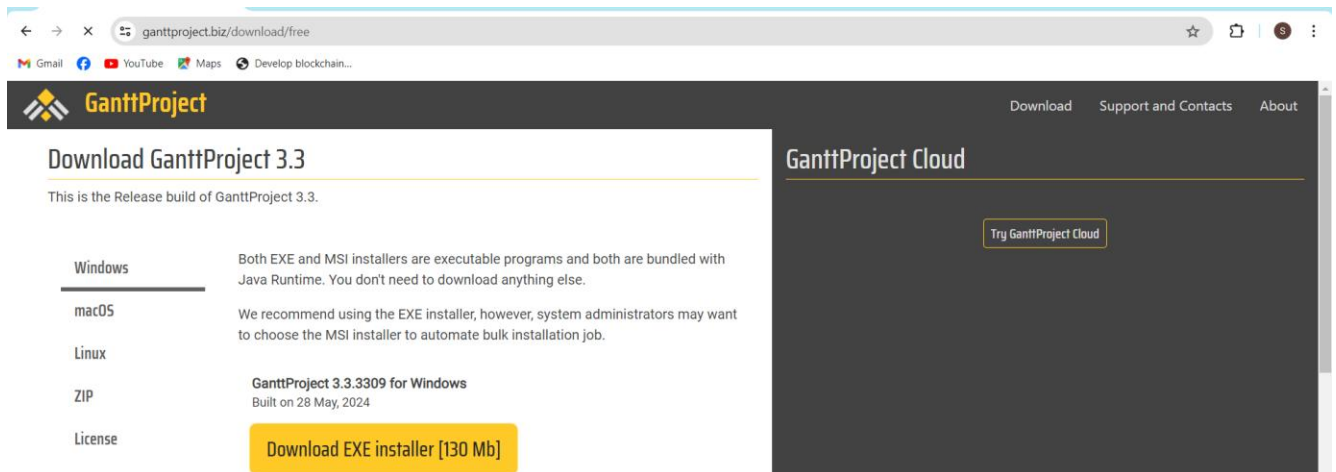
Lab Sheet-5: Introduction to MS Project (Alternate Gantt Project is used).

Since MS project isn't free we will be instead working with GanttProject as a project management software. To get started we visit: <https://www.ganttproject.biz/>

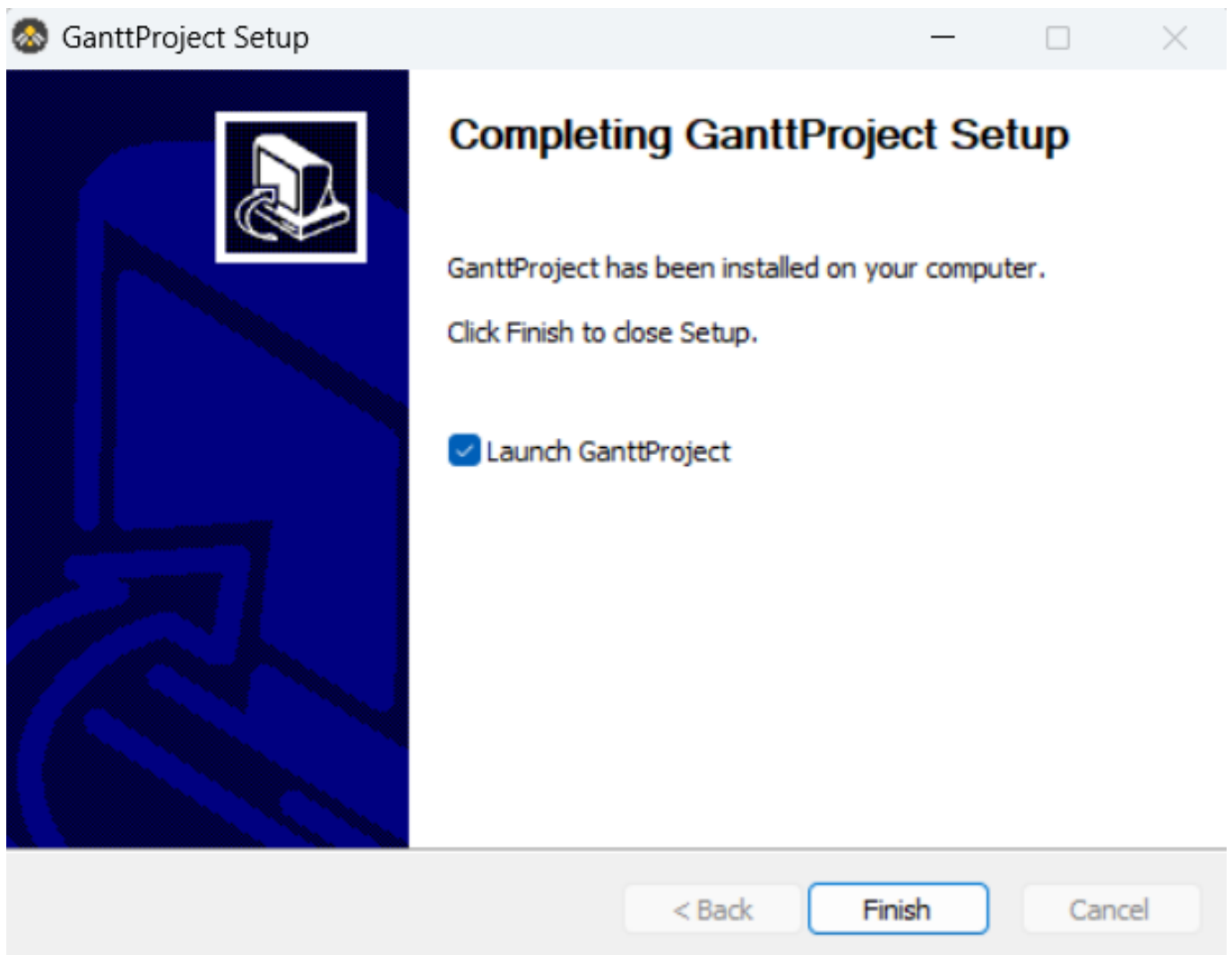
The screenshot shows the GanttProject website homepage. The browser address bar displays 'ganttproject.biz'. The website has a dark header with the GanttProject logo and navigation links: 'Download', 'Support and Contacts', and 'About'. The main content area features the title 'Free desktop project management software' and a subtitle 'Gantt chart for small and medium businesses'. On the left, three key features are listed: 'Easy to use', 'Trusted by customers', and 'Free and open-source', each with a downward arrow icon. On the right, two versions are highlighted: 'GanttProject 3.3' (Released on 15 Jan, 2024) with a yellow 'Download' button, and 'GanttProject 3.2' (Released on 15 Feb, 2022) with a smaller 'Download' button. A section titled 'GanttProject is easy to use' includes a sub-section 'Easy to start' stating that the software is available for Windows, macOS, and Linux, with quick installation and zero setup.

and we get the latest release which is the 3.3 version:

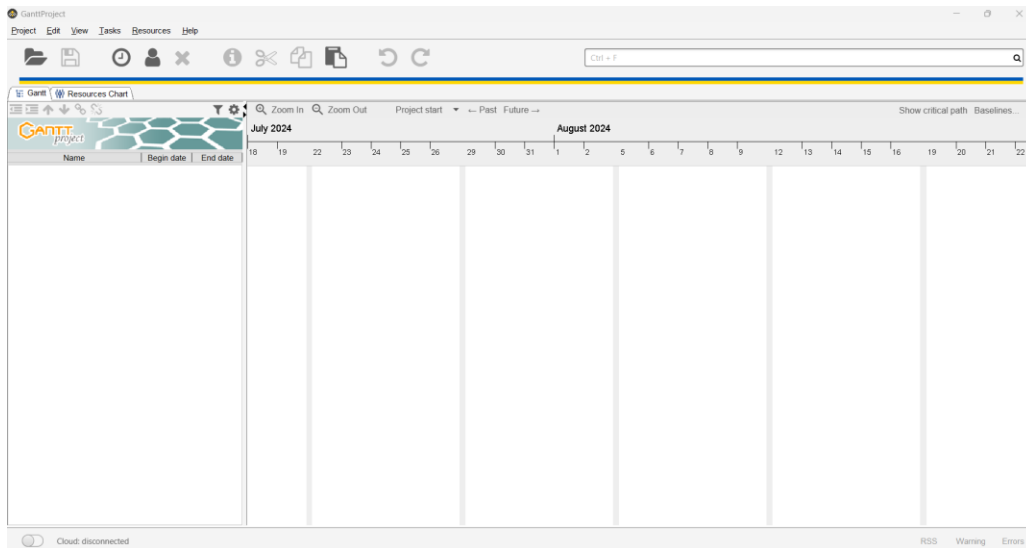
The screenshot shows the 'Download GanttProject' page. The browser address bar displays 'ganttproject.biz/download'. A yellow cookie consent banner is at the top, stating 'We use the following cookies on our web site:' and listing Google Ads and Analytics cookies, with an 'I Agree' button. The page title is 'Download GanttProject' with the subtitle 'free Gantt chart for small and medium businesses'. It features two tabs: 'Download Options' (selected) and 'Release Highlights'. Under 'Download Options', there are two choices: 'Option 1' (Buy GanttProject from our online shop and let us build more new features faster. buy for \$5+) and 'Option 2' (free download). Option 1 includes four yellow buttons for 'Windows', 'macOS', 'Linux', and 'ZIP'. Option 2 states that GanttProject is free software and that paid and free downloads are identical and covered by the same GPL license. A blue 'Free Download' button is located at the bottom.



after setting it up :



We are greeted by this window:




On the title navbar, we can choose the Project tab to create a new project it's a 3 step process:

The screenshot shows a "Create new project" dialog box. The title bar reads "Create new project" with a close button. The dialog has a yellow header bar that says "Create new project (Step 1 of 3)". Below the header, there are four input fields: "Name" (containing "Suprabha'sSPMProject"), "Organization" (empty), "Web Link" (containing "http://"), and "Description" (empty text area). At the bottom, there are four buttons: "< Back", "Next >", "Ok", and "Cancel".

m

4

6


 Create new project ×

Select your project domain (Step 2 of 3)

Choose role sets

☒ Default

☒ Software Development

 Create new project ×

Configure weekends and public holidays (Step 3 of 3)

Choose weekend ☐ Mon ☐ Tue ☐ Wed ☐ Thu ☐ Fri ☒ Sat ☒ Sun

On weekends no tasks can run

Holiday calendar none

One-off

Recurring

Add

Delete

Dates	Summary	Type	Color

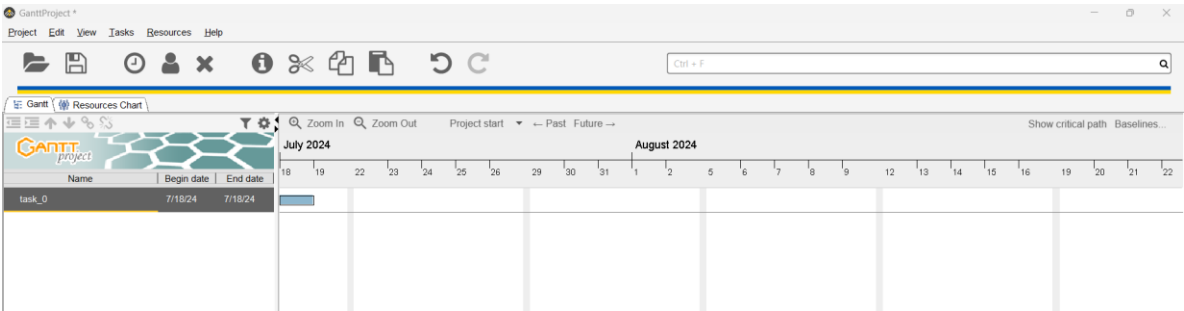
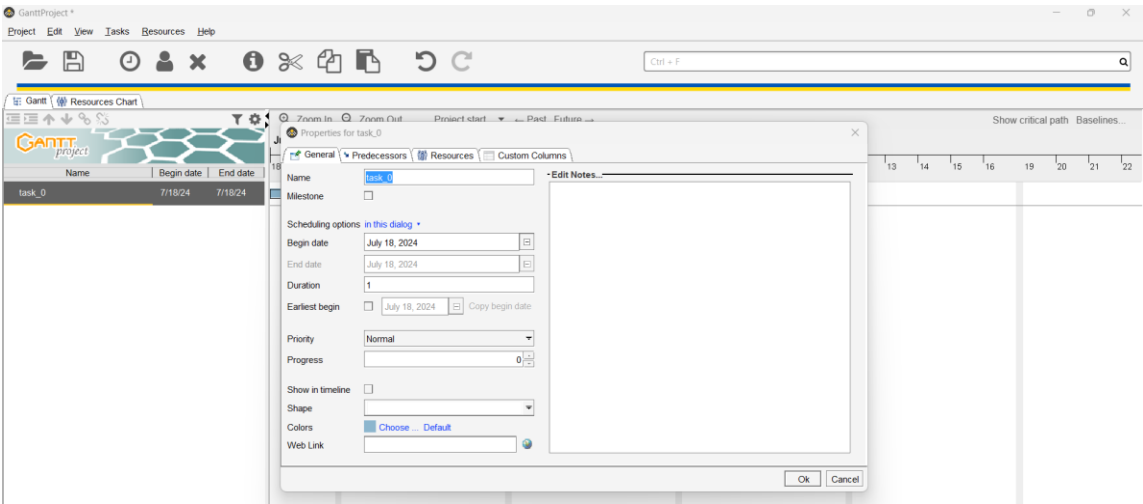
< Back

Next >

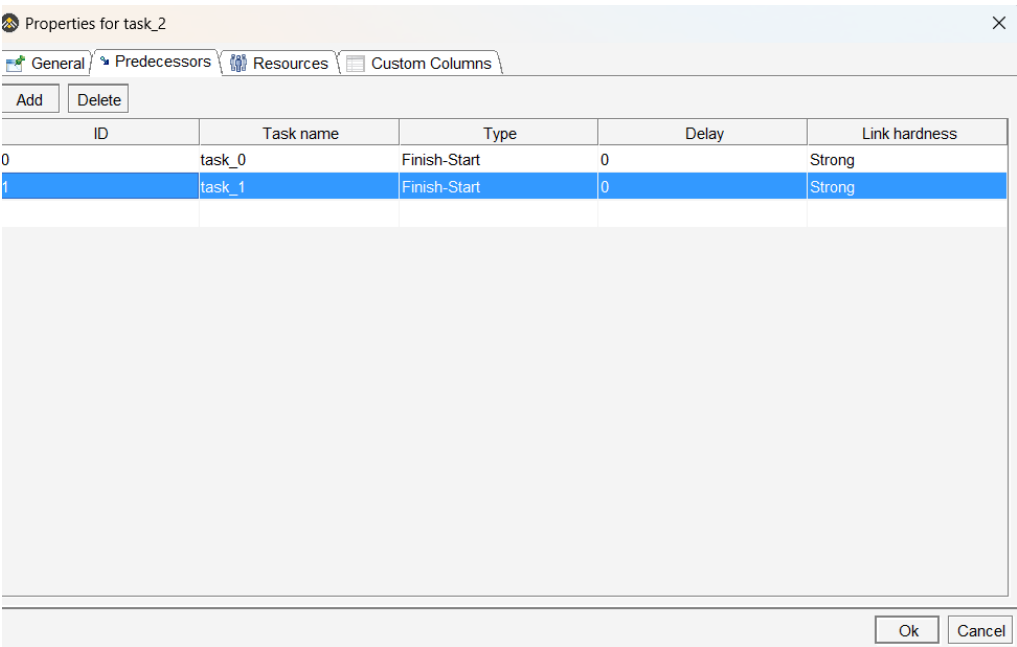
Ok

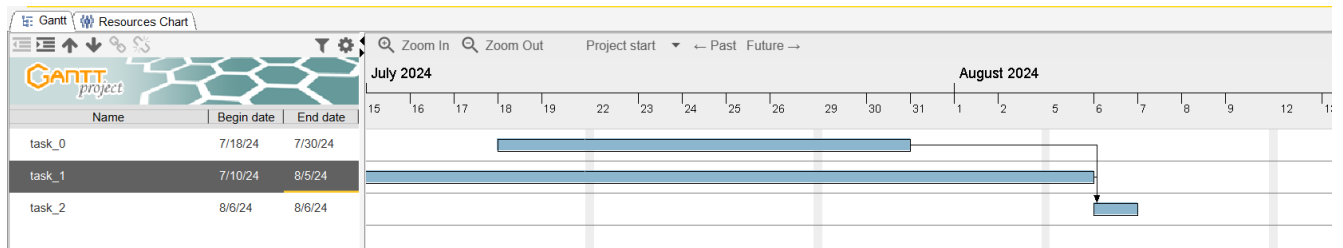
Cancel

We can create new tasks by accessing the Tasks tab or keyboard shortcut Ctrl + T and configure it :



We can configure the more tasks to be predecessor task for a following task, such as here we can configure task_0 and task_1 to be predecessor to task_2 and require completion before moving to task_2:





We can also create a milestone at the end of all 3 tasks to mark a major point in the system development.

Properties for task_3

General | Predecessors | Resources | Custom Columns

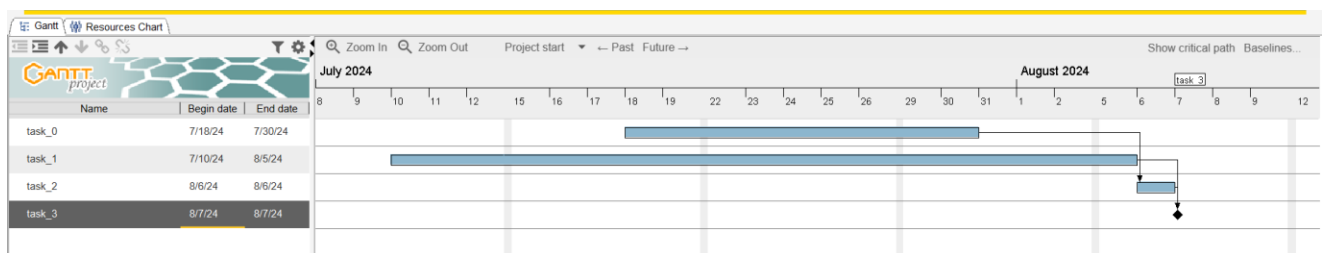
Name: task_3

Milestone: ☒

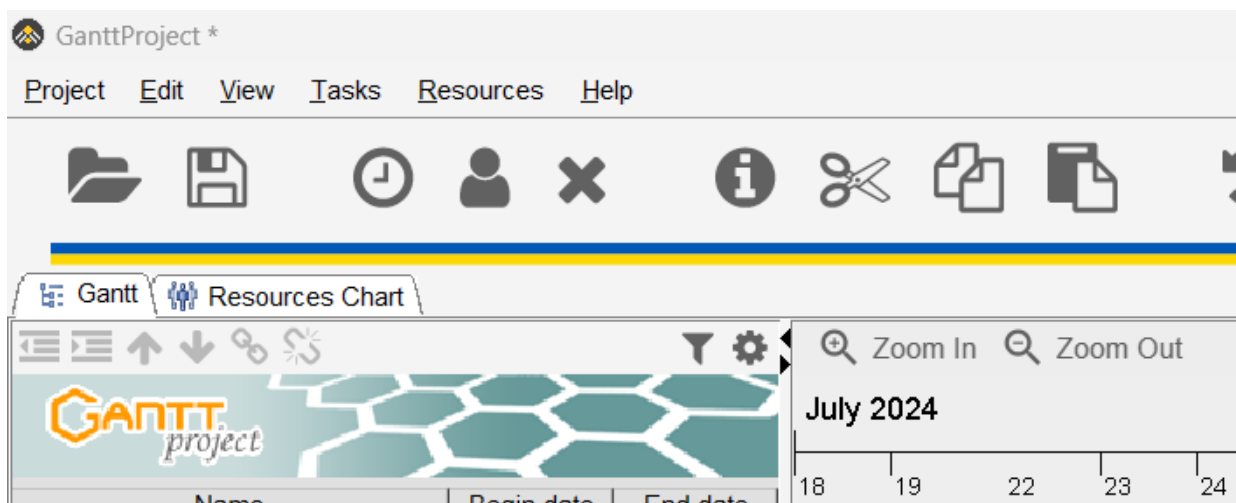
Scheduling options: in this dialog

Begin date: July 15, 2024

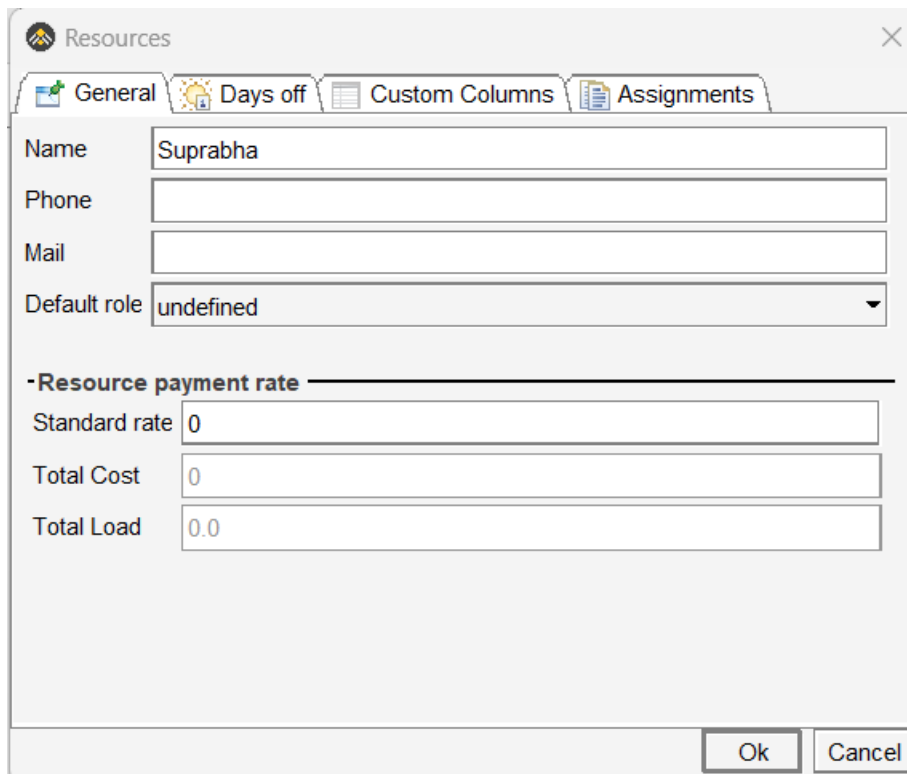
- Edit Notes...



Resources can be added to the tasks to like manpower to be assigned to each task this can be accessed by clicking on the resources chart tab:



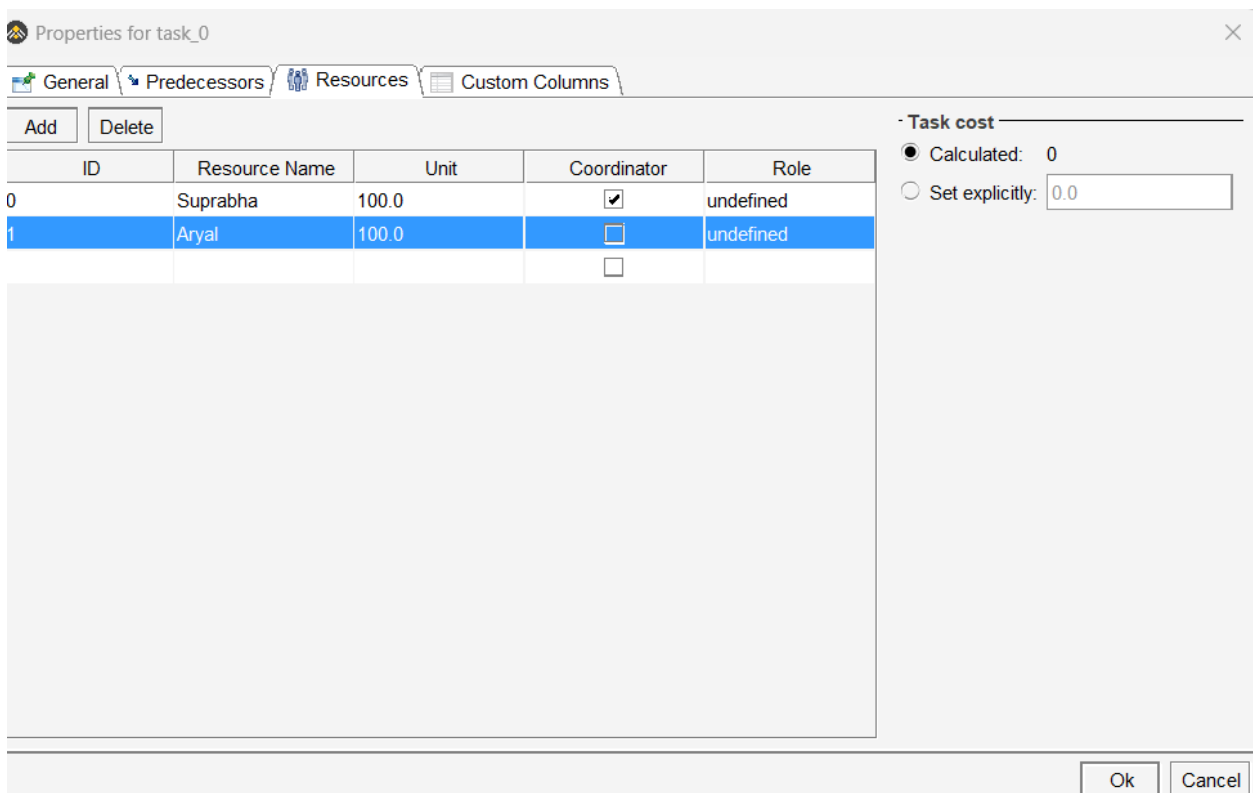
New resource is created by Ctrl + H shortcut:



The 'Resources' dialog box is shown with the 'General' tab selected. It contains fields for Name, Phone, Mail, and Default role. Below these is a section for resource payment rates with fields for Standard rate, Total Cost, and Total Load. The 'Ok' and 'Cancel' buttons are at the bottom right.

Field	Value
Name	Suprabha
Phone	
Mail	
Default role	undefined
Standard rate	0
Total Cost	0
Total Load	0.0

Then we can go back to the Gantt chart to assign these resources to each task:

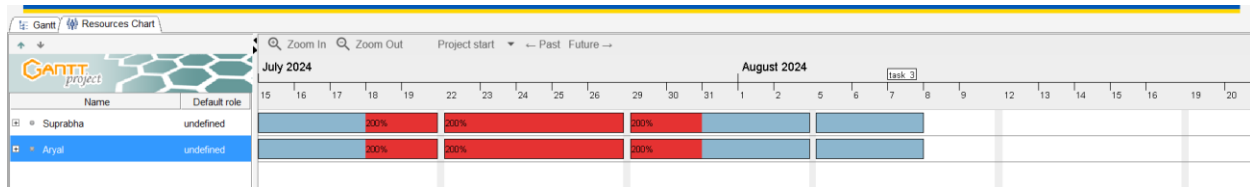


The 'Properties for task_0' dialog box is shown with the 'Resources' tab selected. It contains a table with columns: ID, Resource Name, Unit, Coordinator, and Role. The 'Task cost' section on the right has radio buttons for 'Calculated' and 'Set explicitly'. The 'Ok' and 'Cancel' buttons are at the bottom right.

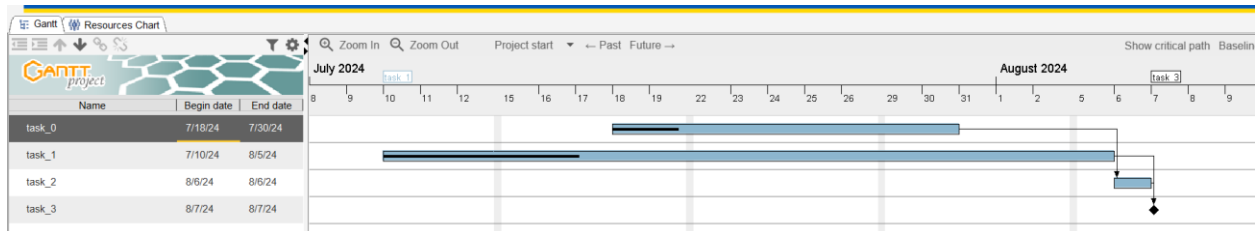
ID	Resource Name	Unit	Coordinator	Role
0	Suprabha	100.0	<input checked="" type="checkbox"/>	undefined
1	Aryal	100.0	<input type="checkbox"/>	undefined
			<input type="checkbox"/>	

Task cost: ☒ Calculated: 0 ☐ Set explicitly: 0.0

These changes are reflected in the resources chart:



We can also show the progress of the task by entering the progress percent by going to the task bar and then task properties and enter the value in progress, it will show the progress:



The final project can be exported in array of different formats such a .mpx file for MS project or Html report and so on tailored to your needs.