

TP1

Metodos de búsqueda

72.27 - Sistemas de Inteligencia Artificial

01

8 - Puzzle



Objetivo

5	7	3
8	2	
1	6	4



1	2	3
8		4
7	6	5

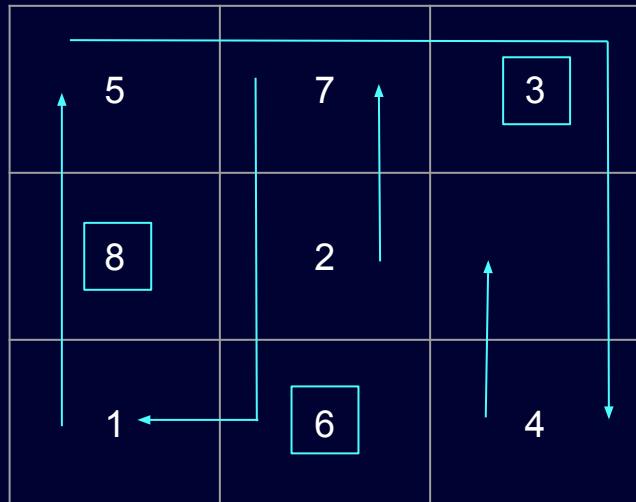
Estructura de estado:

Matriz 3x3 de enteros

5	7	3
8	2	0
1	6	4

Heurística 1

Suma de la distancia Manhattan de cada número a la posición de solución



$$4 + 3 + 0 + 0 + 1 + 2 + 0 + 1 = 11$$

Heuristica 2

Cantidad de números fuera de su casillero solución (sin contar el espacio vacío)

5		7		3
8		2		
1		6		4

= 5

Metodos de busqueda

A*

IDA*

02

Sokoban

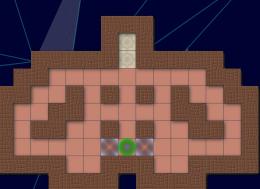


Estructura de estados:

Matriz de entidades

Se parsea el código que sigue el formato de game-sokoban.com

```
'#': Entity.WALL,  
' ': Entity.SPACE,  
'.': Entity.GOAL,  
'$': Entity.BOX,  
'@': Entity.PLAYER,  
'*': Entity.BOX_ON_GOAL,  
'+': Entity.PLAYER_ON_GOAL
```



```
###  
#. #  
#####.#####  
## ## ##  
## # # # # #  
# # # # # # #  
# # # # # # #  
# # # # # # #  
##### # # # #  
##### # # # #
```

lvl2.txt

```
class Entity(object):  
    SPACE = ''  
    WALL = '#'  
    BOX = '▣'  
    PLAYER = '@'  
    GOAL = '!'  
    BOX_ON_GOAL = '*'  
    PLAYER_ON_GOAL = 'x'
```

```
###  
#!#  
#####!#####  
## ## ##  
## # # # # #  
# # # # # # #  
# # # # # # #  
# # # # # # #  
# # # # # # #  
##### # # # #  
##### # # # #
```

Matriz de entidades de NxM

Heurísticas

Métricas de distancia:

Distancia Euclíadiana, Distancia Manhattan

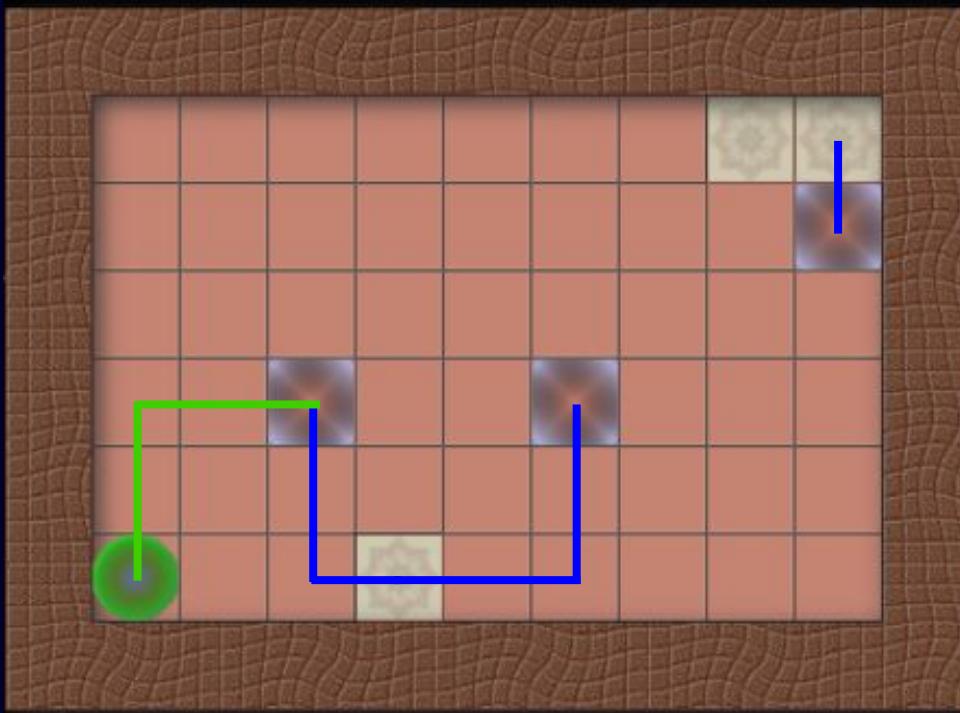
Heurística de Distancia (DH):

Por cada caja se suma su distancia al goal más cercano.

Heurística de Distancia con jugador (DH+P):

A la heurística de distancia se le suma la distancia del jugador a la caja más cercana.

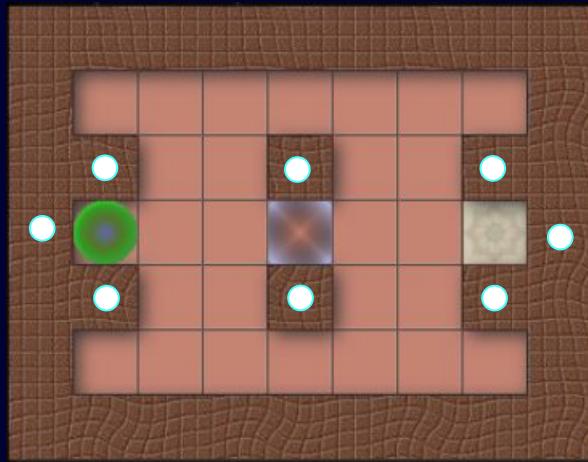
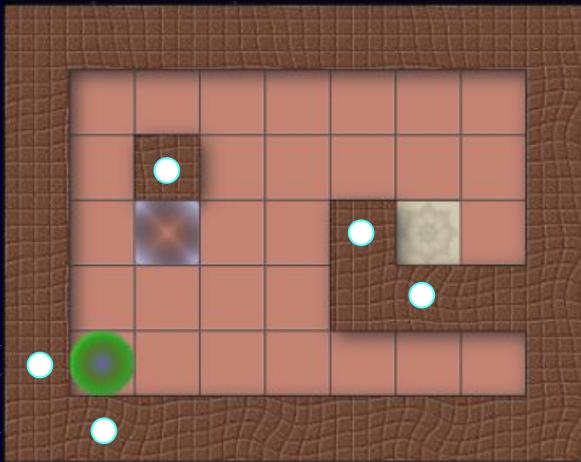
Heuristicas



Heurísticas

Heurística de Distancia modificada (MDH+P):

Igual que la heurística de distancia, pero se le suma la cantidad de paredes que rodean las entidades afectadas (cajas, goals, jugador)



Optimizaciones

Esquinas

Las cajas no pueden estar en las esquinas (a no ser que sea un goal). No hay manera de sacarlas de allí.

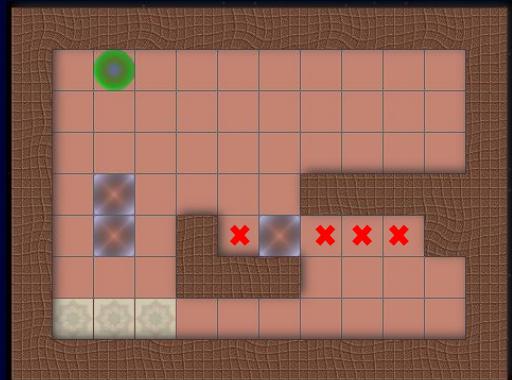
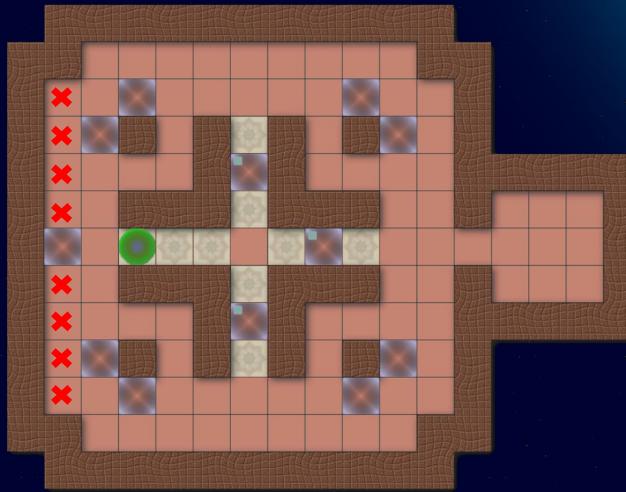


Optimizaciones

Columnas o Filas

En caso de que una caja esté reposando sobre una pared (vertical o horizontal) y que en los extremos haya esquinas, no puede salir de ahí.

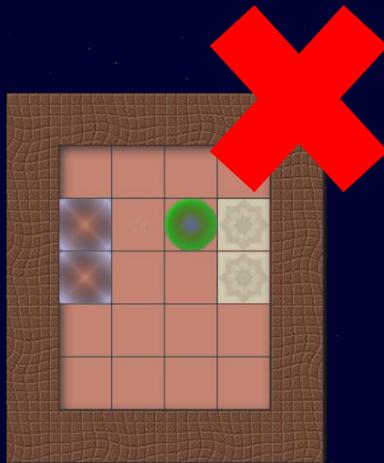
Notar que las paredes pueden ser intercaladas.



Optimizaciones

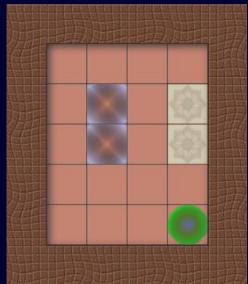
Dos cajas

En caso que haya dos cajas juntas con paredes a su lado, esas cajas no tienen forma de salir.

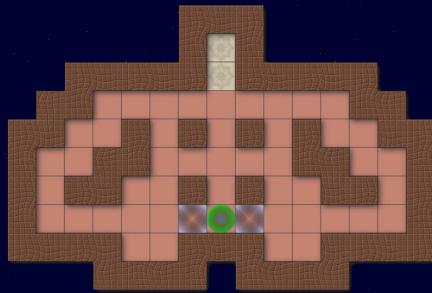


Análisis 1 - Algoritmos

Constante: Heuristica Manhattan



LVL 1

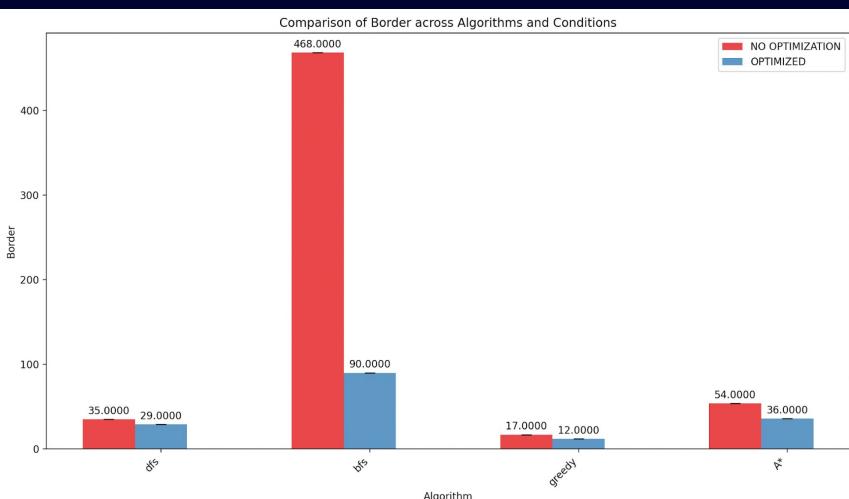
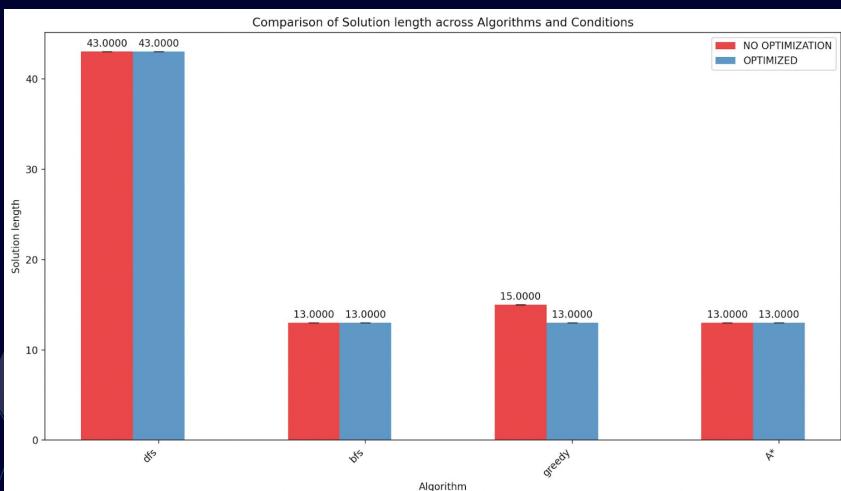
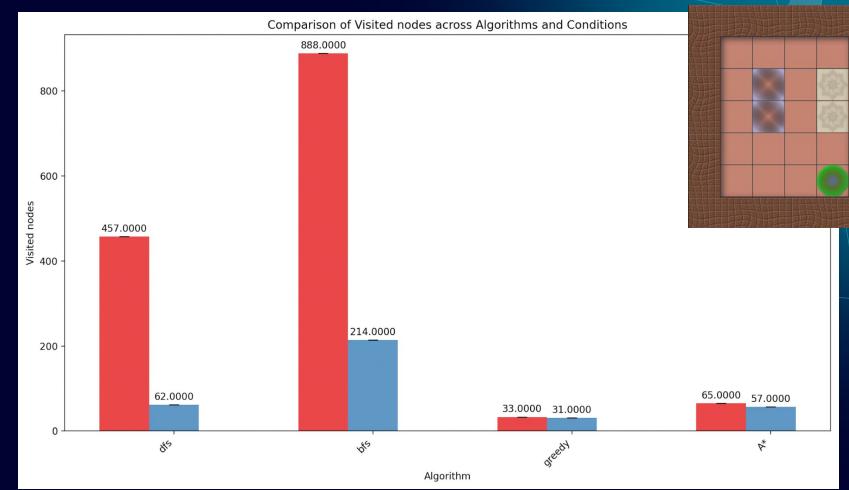
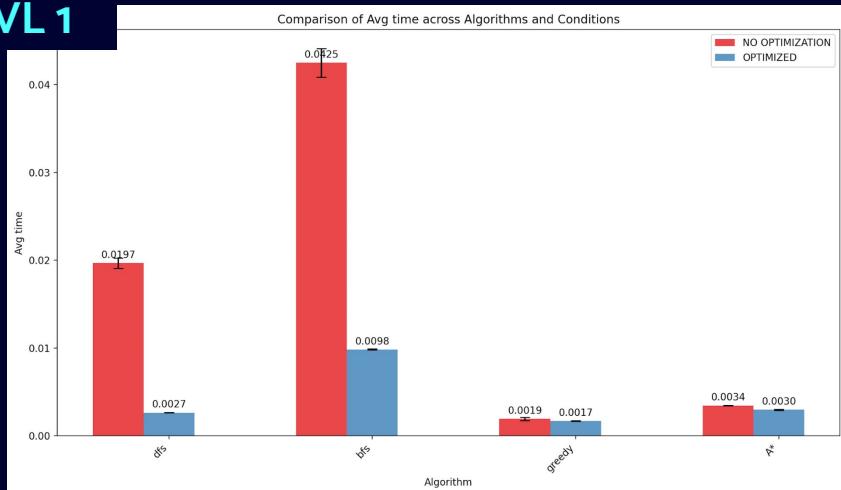


LVL 2

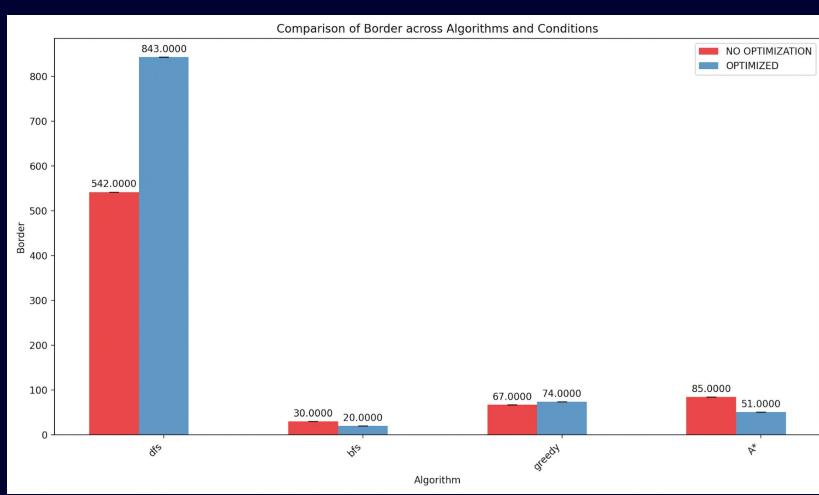
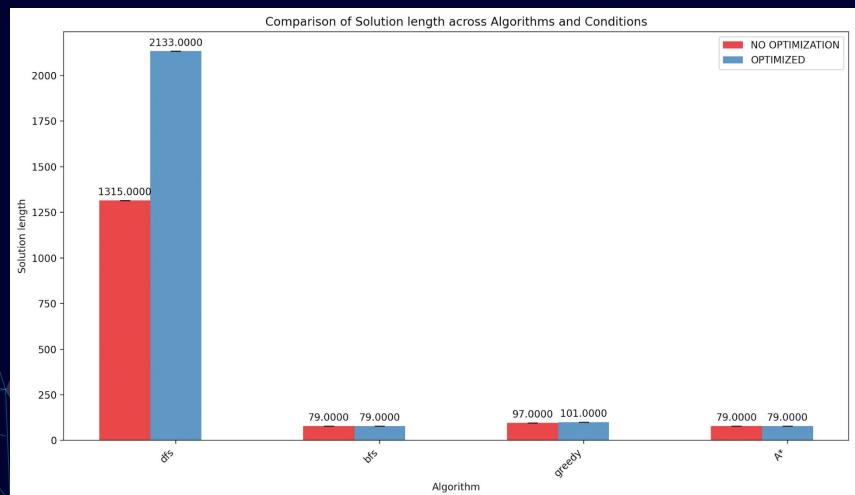
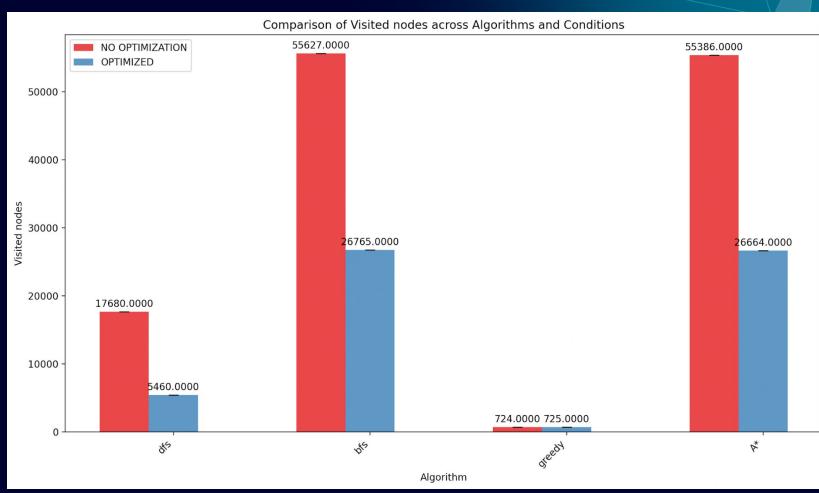
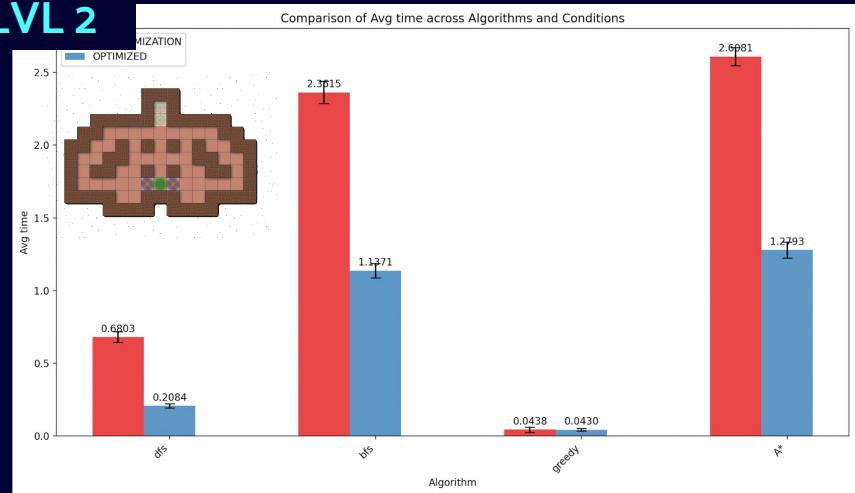


LVL 3

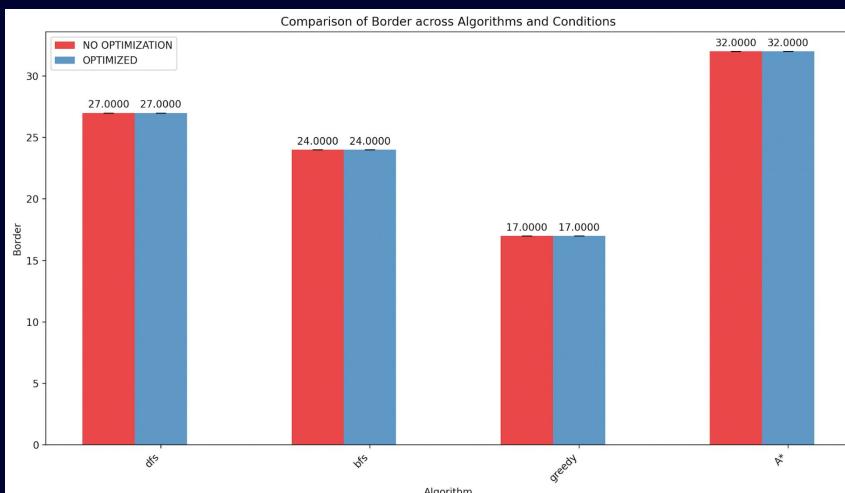
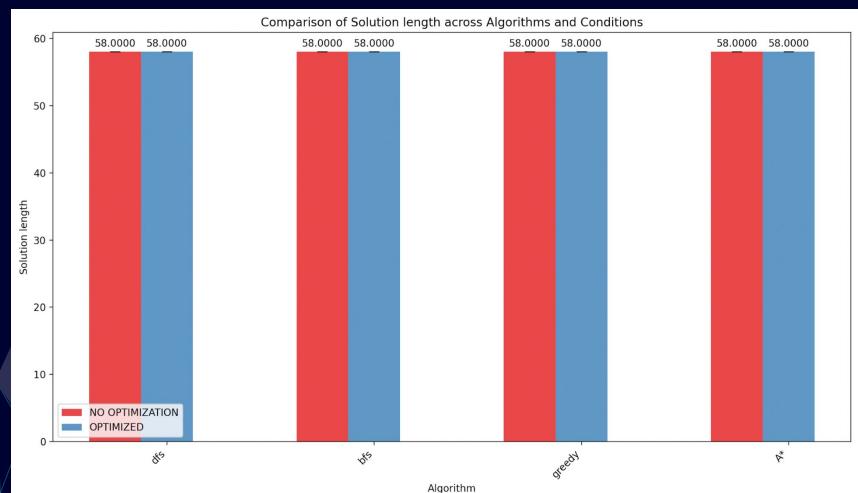
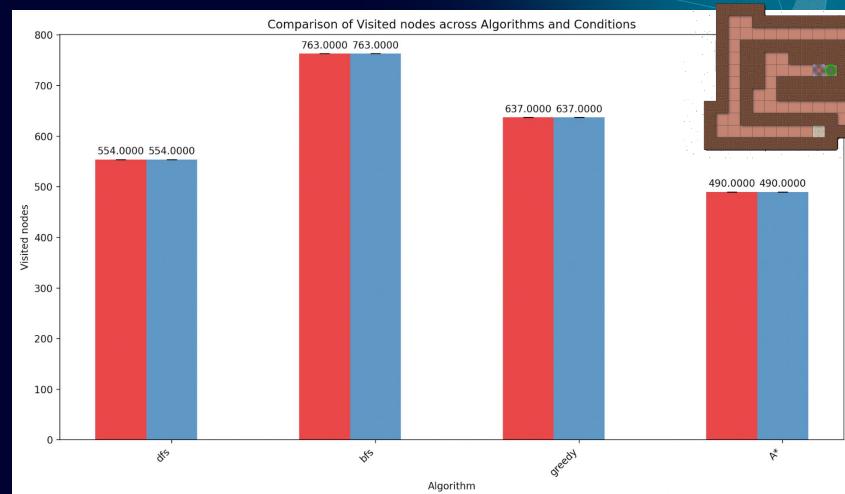
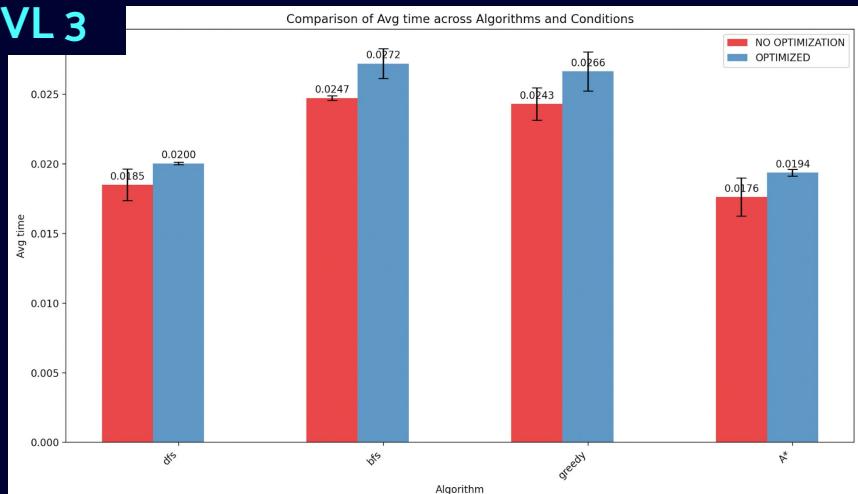
LVL 1



LVL 2

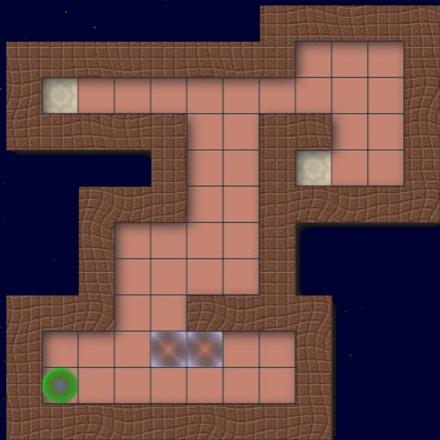


LVL 3

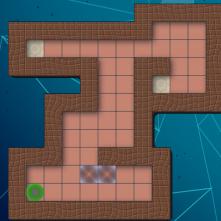


Análisis 1 - Heurísticas

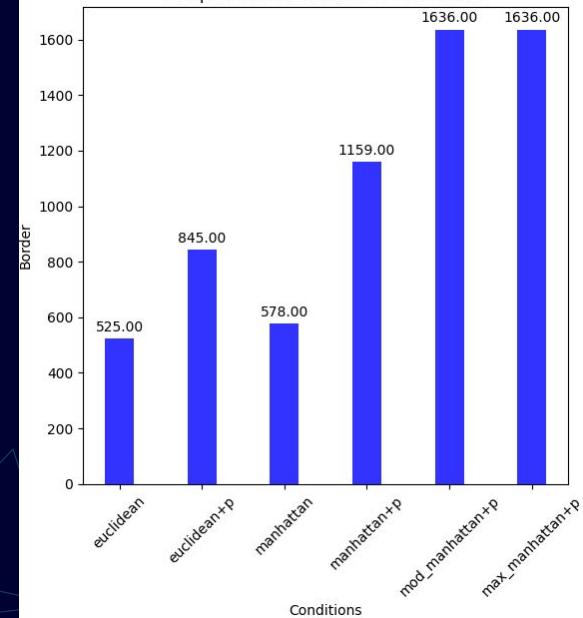
Se compara el performance de las heurísticas en el siguiente nivel:



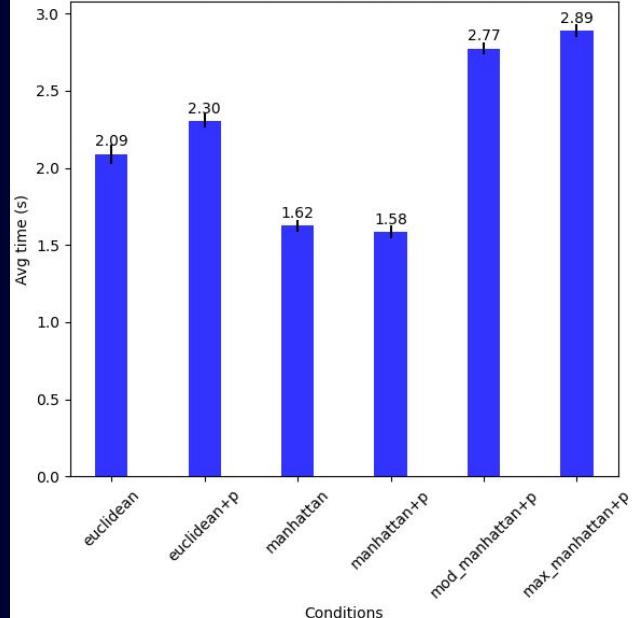
Análisis 1 - Heurísticas



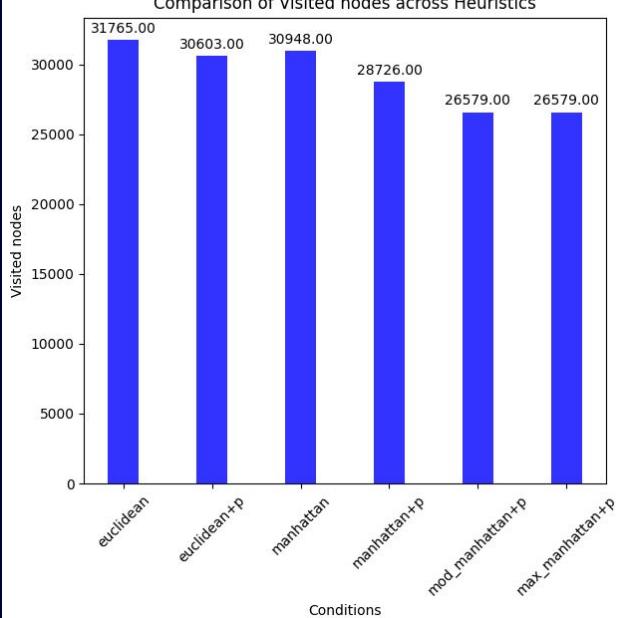
Comparison of Border across Heuristics



Comparison of Avg time (s) across Heuristics

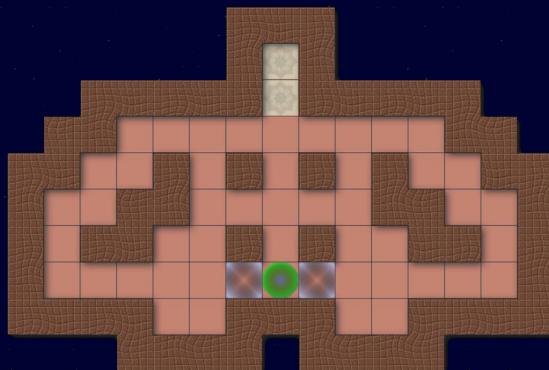


Comparison of Visited nodes across Heuristics

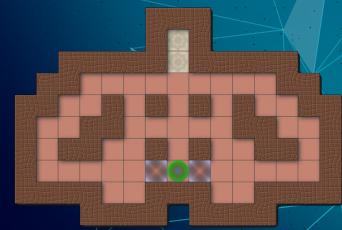


Análisis 2 - Heurísticas

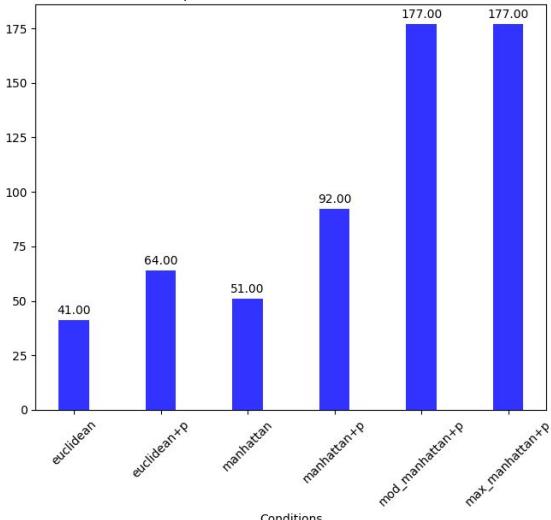
Se compara el performance de las heurísticas en el siguiente nivel:



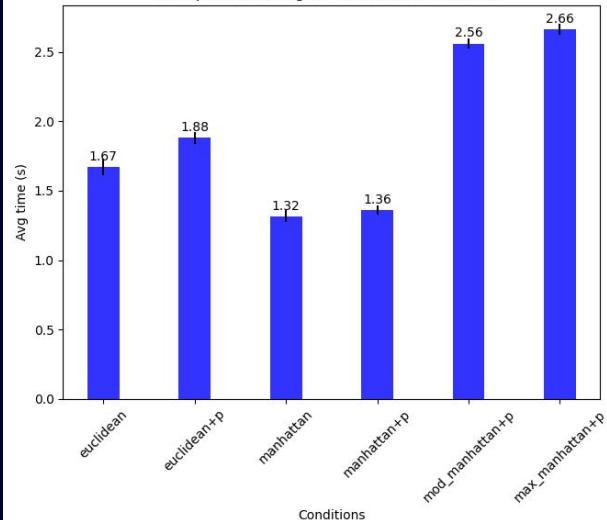
Análisis 2 - Heurísticas



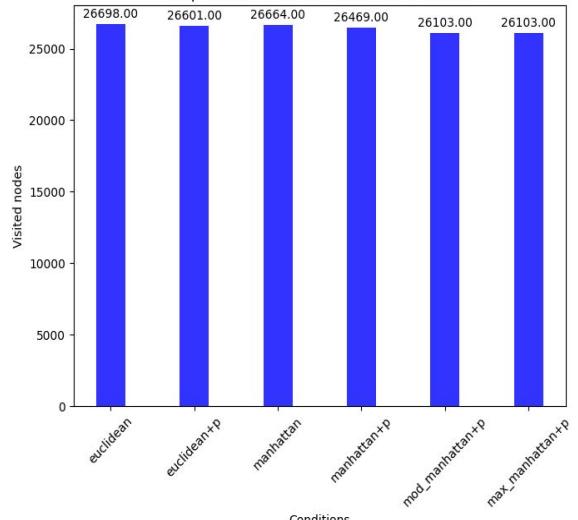
Comparison of Border across Heuristics



Comparison of Avg time (s) across Heuristics



Comparison of Visited nodes across Heuristics



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<u>Used and alternative resources</u>	An assortment of graphic resources that are suitable for use in this presentation
<u>Thanks slide</u>	You must keep it so that proper credits for our design are given
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How to create a project proposal

Creating a project proposal can be done in five steps:

1. Define the project objectives and timeline
2. Identify resources needed to complete the project
3. Develop a budget for the project and estimate any potential risks associated with it
4. Write down your proposed solution and provide supporting documents or evidence that prove its feasibility if necessary
5. Develop a communication plan to ensure key stakeholders are kept informed of progress throughout the entire process



Budget

Sources of funding

Funding for a company can come from personal savings or investments, bank loans and other loan options, venture capital and angel investors, grants, competitions or programs, crowdfunding...

Equipment and materials

Equipment and materials costs refer to all the expenses related to the purchasing, maintenance and upkeep of any physical items used in production or other business processes inside the company

Personnel costs

Personnel costs refer to the expenses incurred in hiring, training and retaining staff for a company. This can include salaries, bonuses, benefits and other payroll-related costs

Travel and miscellaneous

Travel and miscellaneous costs refer to expenses related to any travel-related activities, such as conferences, trainings or business trips. It may also include office supplies, communications services, licenses and other miscellaneous expenses

Solutions

Solution 1

Implementing a new CRM (Customer Relationship Management) system to improve customer data management and sales tracking

Solution 4

Developing a new product or service to diversify the business and increase revenue streams

Solution 2

Outsourcing specific business functions (such as accounting or IT) to a third-party provider to reduce costs and increase time efficiency

Solution 5

Implementing a cost-saving initiative, such as energy-efficient practices or process automation, to reduce expenses

Solution 3

Launching an e-commerce platform to expand the reach of the business and increase online sales

Solution 6

Establishing strategic partnerships with other businesses to gain access to new markets or innovative technologies





\$500,000

Net profit of the project

200 units

Break-even point

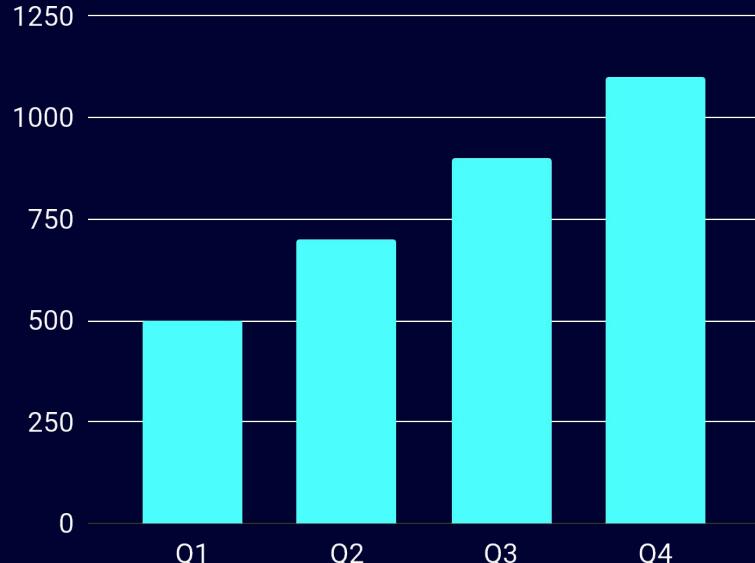
25%

Market share in the industry

10 million

First-year revenue of the project

Project data



Benefits of using graphs

Graphs in project proposals offer visual organization, enabling clear presentation of information in a structured format. They enhance the visual appeal, facilitate data comparison and improve overall clarity and professionalism of your project proposal

Follow the link in the graph to modify its data and then paste the new one here. [For more info. click here](#)

Project activities

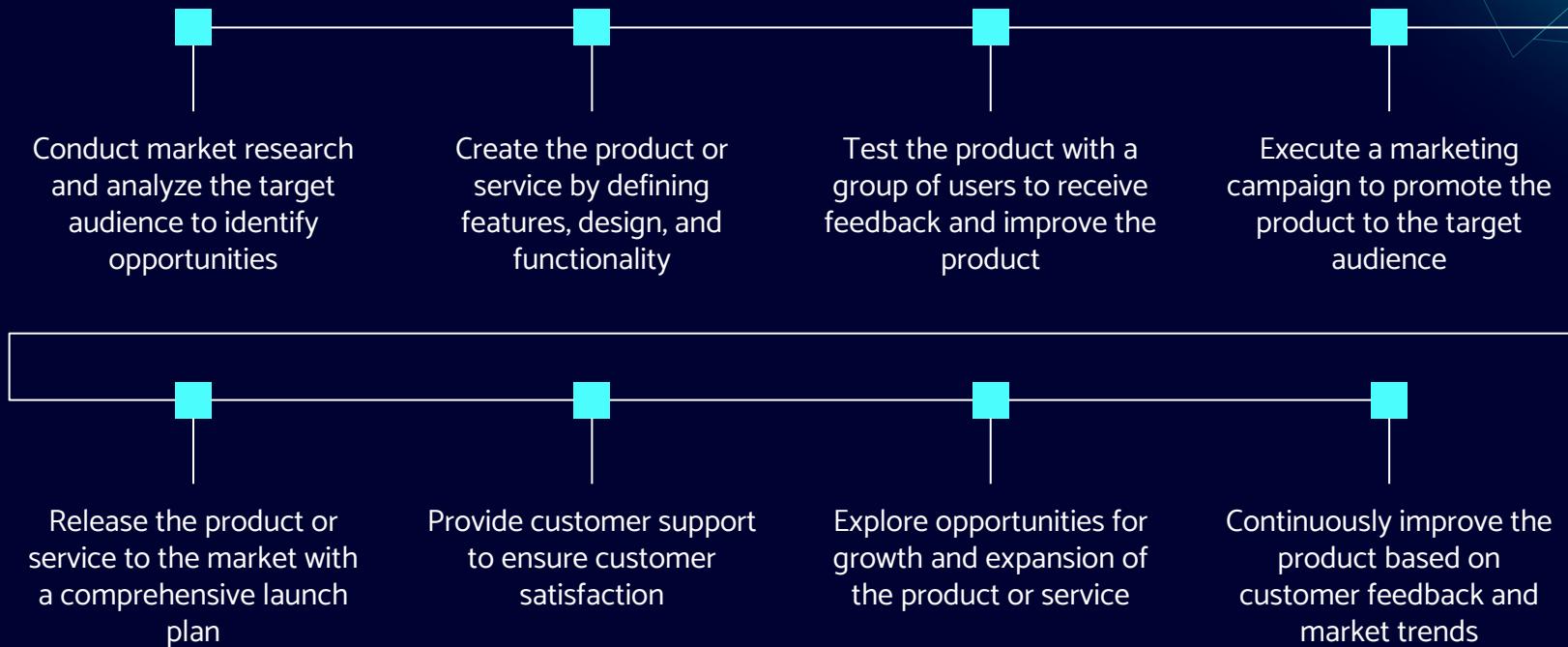
Activity	Start date	End date	Resource	Cost	Revenue
Market research	1/1/20XX	1/15/20XX	Market research firm	\$20,000	
Product development	1/16/20XX	6/30/20XX	R&D team	\$200,000	
Beta testing	7/1/20XX	8/15/20XX	Beta testers	\$10,000	
Marketing campaign	1/1/20XX	1/15/20XX	Advertising agency	\$100,000	
Product launch	1/16/20XX	6/30/20XX	Sales team	\$50,000	\$500,000
Post-launch support	7/1/20XX	8/15/20XX	Support team	\$50,000	\$800,000

What to show in a mockup

1. Product/website description: A brief overview of the product/website, including its key features, dimensions, and materials used
2. Features and benefits: A detailed explanation of the product's/website's features and how they will benefit the user
3. Technical specifications: A list of the product's/website's technical specifications, such as dimensions, weight, power requirements, connectivity options and hosting platform



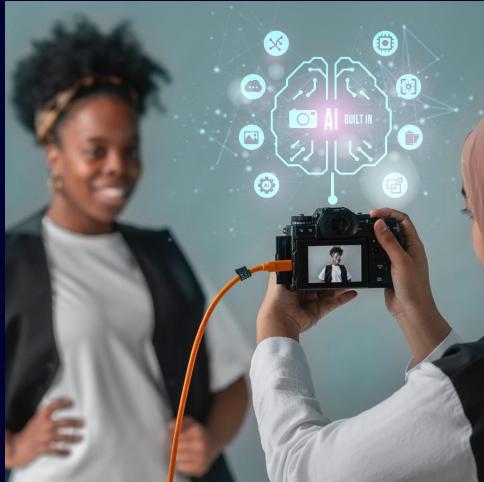
Project timeline



Project roadmap

Photo showcase

A photo showcase can be a useful addition to a business project proposal as it can help to visually communicate the concept or idea being proposed



Project expenses

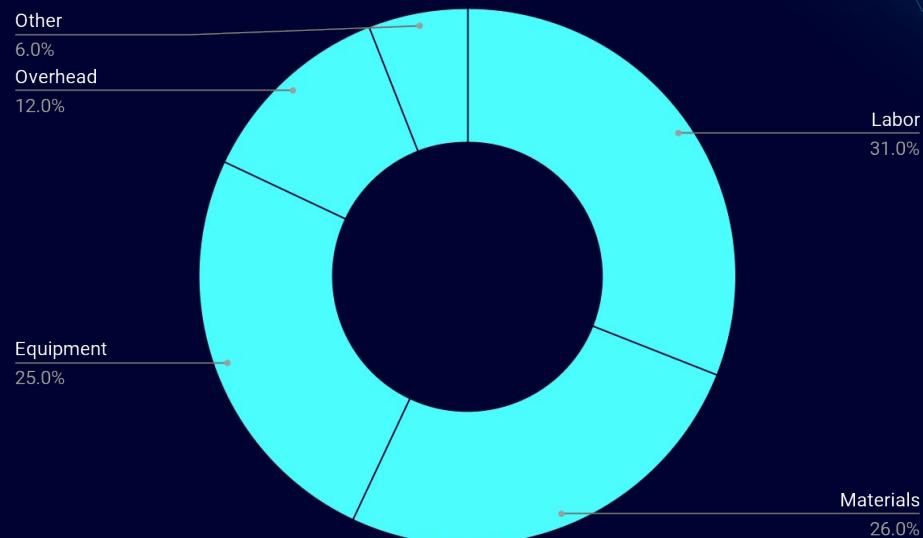
Labor

Materials

Equipment

Overhead

Other



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KPI dashboard

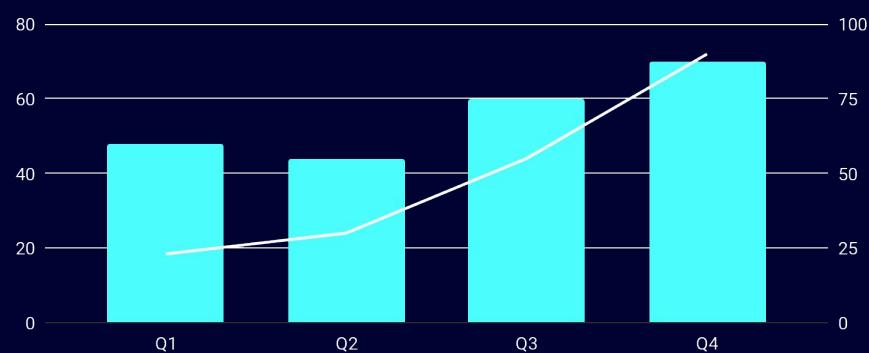
Resource	Utilization rate	Cost per unit
Labor	85%	\$50
Equipment	70%	\$100
Materials	95%	\$20
Rent	90%	\$1,000
Energy	80%	\$80
Software licenses	80%	\$200
Advertising	60%	\$500

120 u/day

Output per worker

2h

Time to complete a task



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Alternative resources

Here's an assortment of alternative resources whose style fits the one of this template:

- [Artificial intelligence landing page template](#)



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- [Person using ai tool at job I](#)
- [Person using ai tool at job II](#)
- [Person using ai tool at job III](#)
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- [Artificial intelligence landing page](#)



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Catamaran Regular and Bold

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#4cfdfd

#ffffffff

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Pana



Amico



Bro



Rafiki



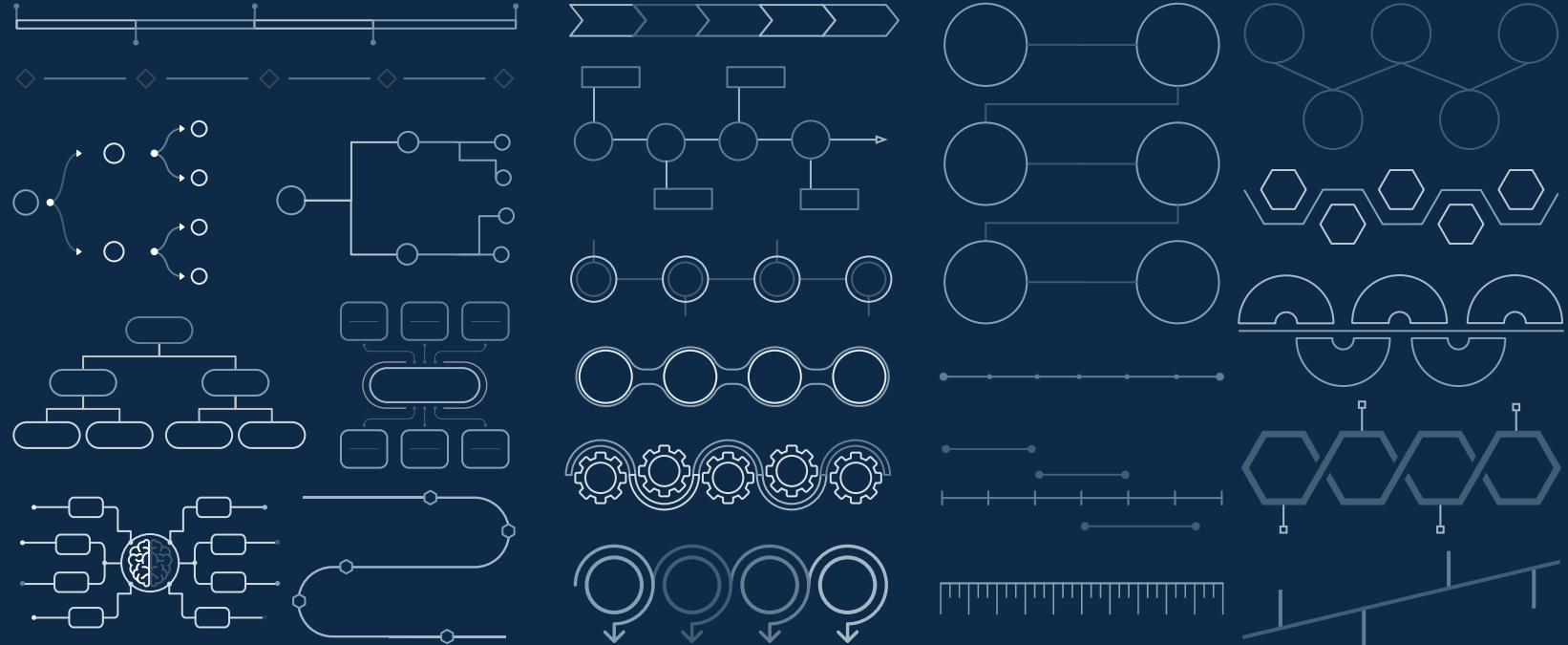
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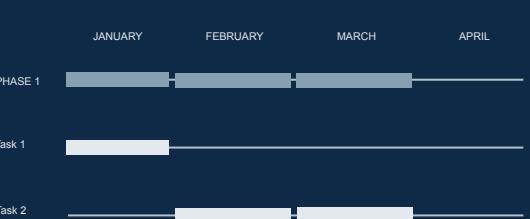
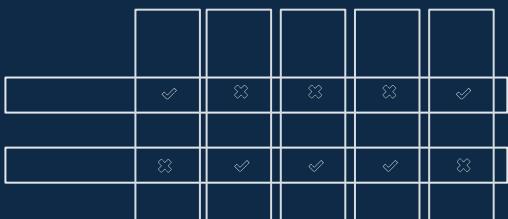
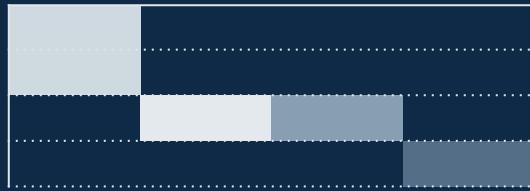
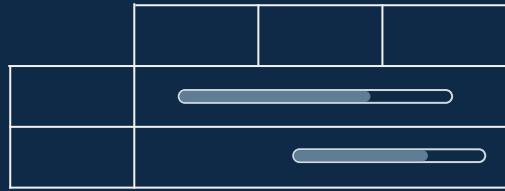
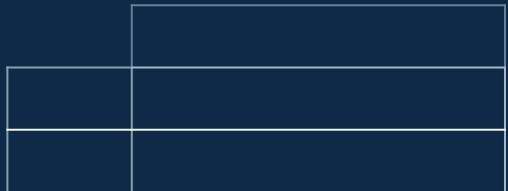
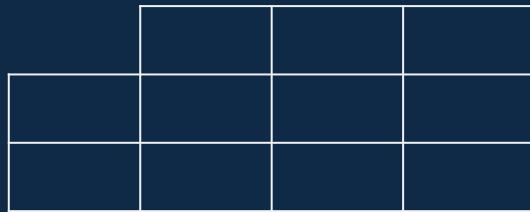
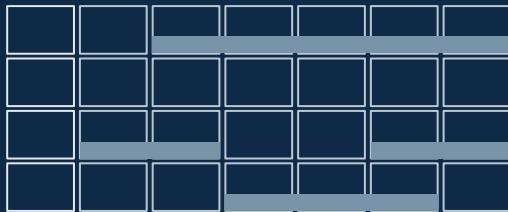
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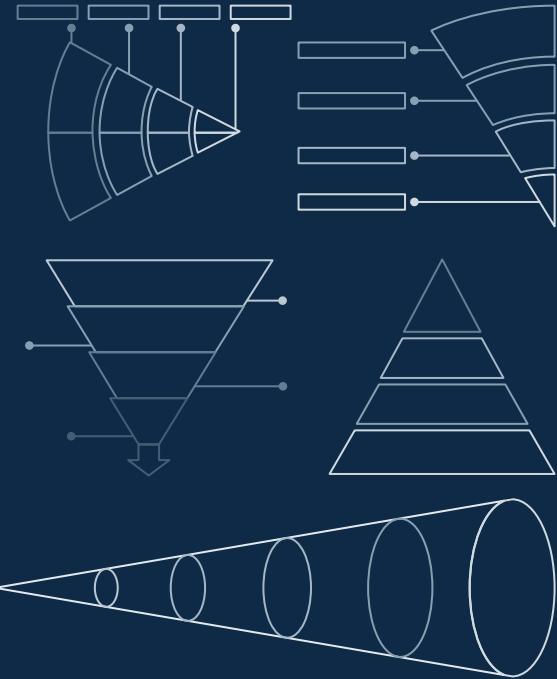
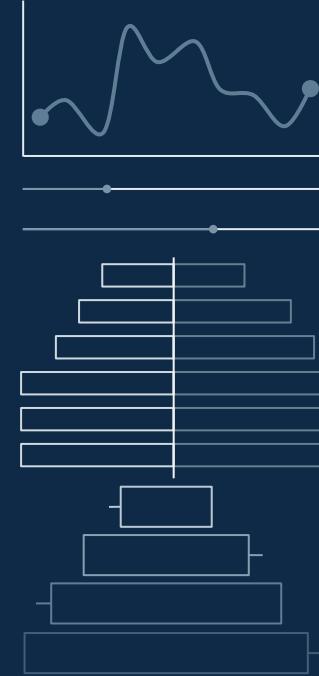
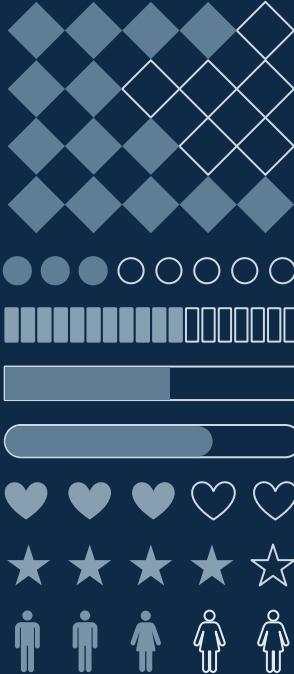
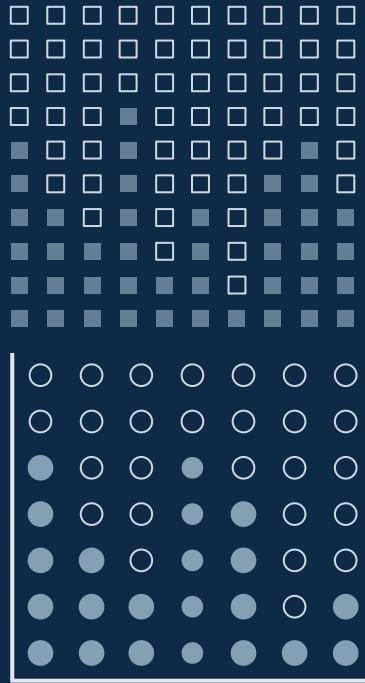












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Educational Icons



Medical Icons



Business Icons



Teamwork Icons



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Avatar Icons



Creative Process Icons



Performing Arts Icons



Nature Icons



SEO & Marketing Icons



