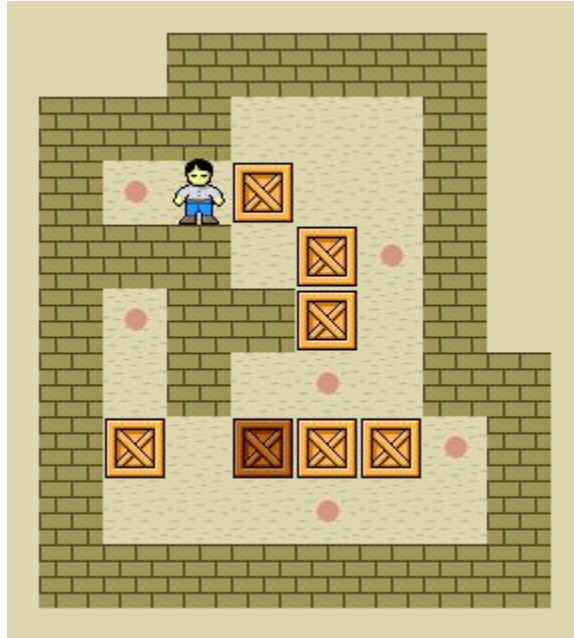


# Algoritmos de Búsqueda

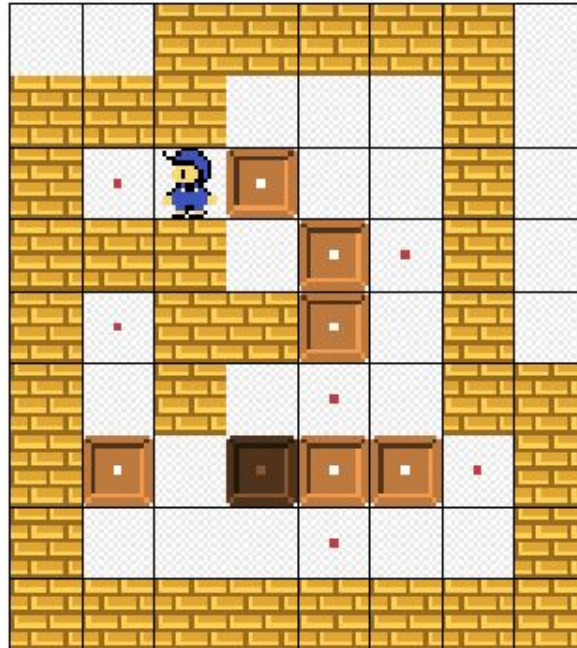
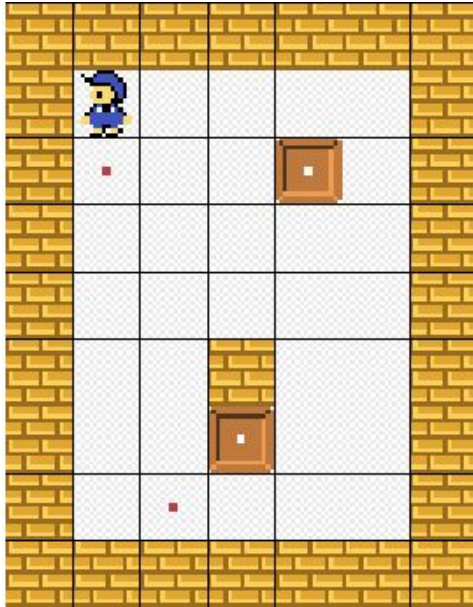
## Resolviendo el Sokoban

Axel Fratoni  
Fernán Oviedo  
Gastón Rodríguez  
Julián Antonielli

# Sokoban

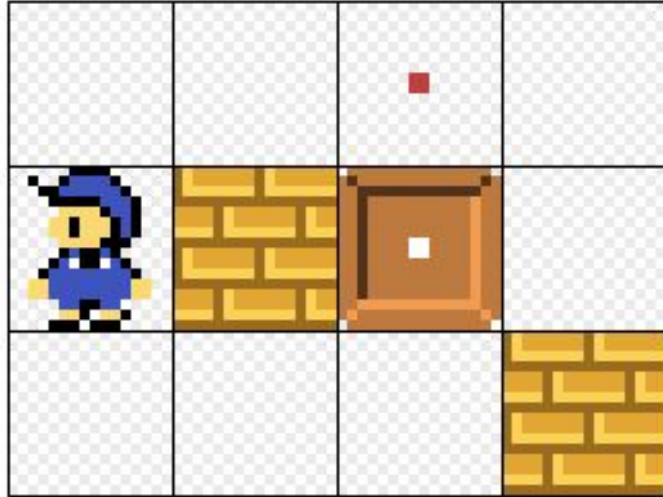


# Tableros elegidos



# Reglas

- Mover caja en (1,3) hacia arriba.
- Mover caja en (1,3) hacia abajo.



# Heurísticas

## **Cajas posicionadas:**

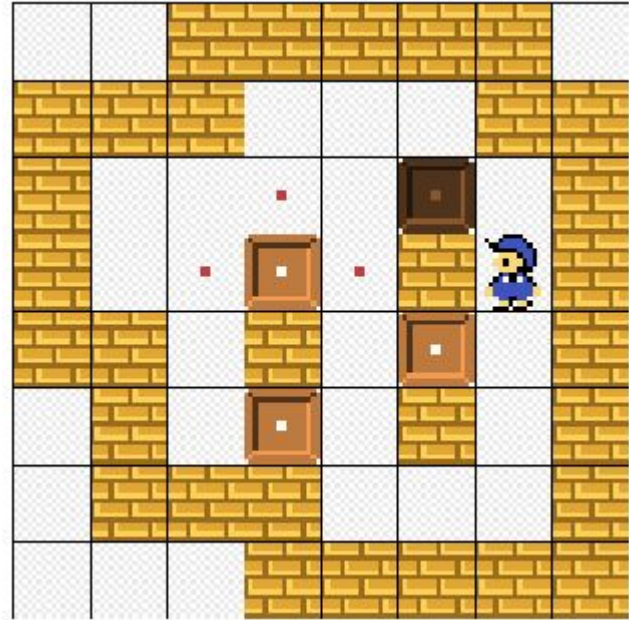
Calcula el costo en base a la cantidad de cajas que no están posicionada sobre una meta.

## **Suma de distancias:**

Calcula el costo en base a la suma de la distancia de Manhattan entre cada caja y su meta más cercana.

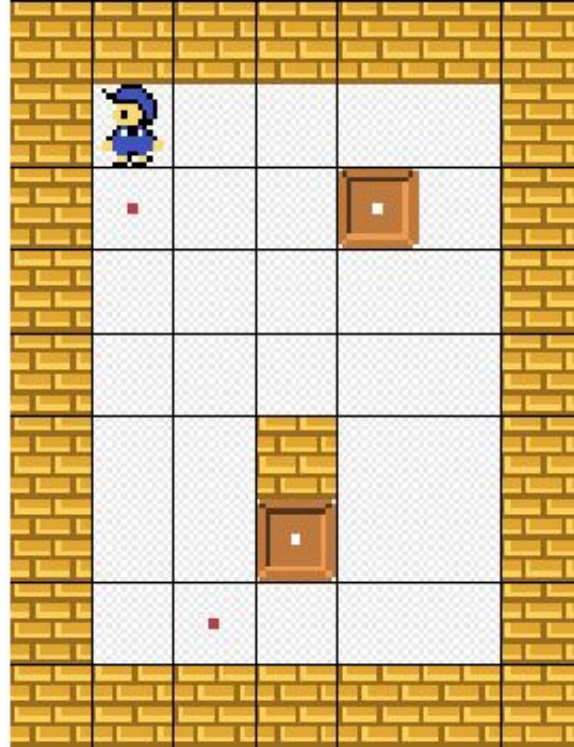
# Cajas posicionadas

$$h(g) = 3$$



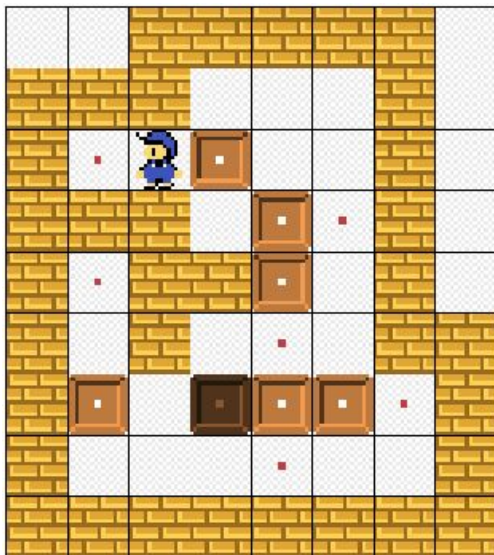
# Suma de distancias

$$h(g) = 5$$

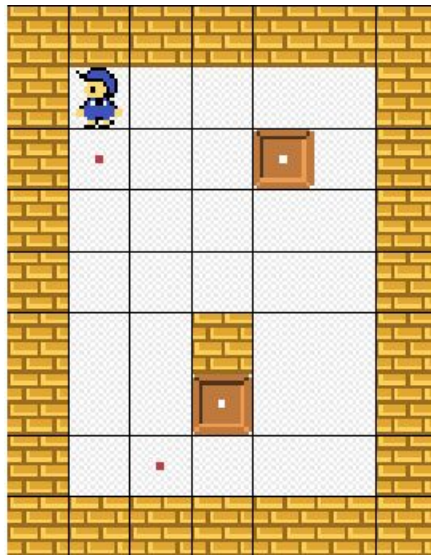




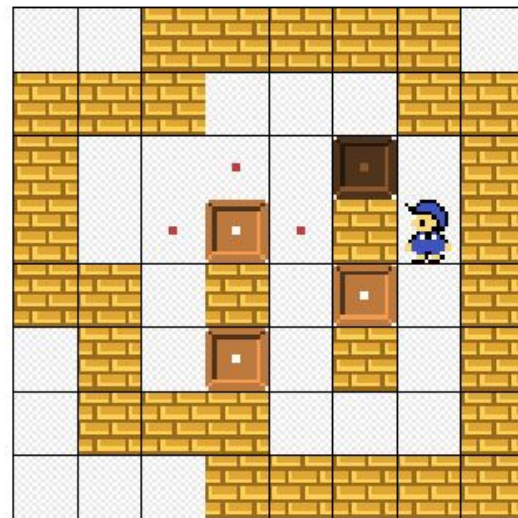
# Resultados



Nivel 2



Nivel 3



Nivel 4

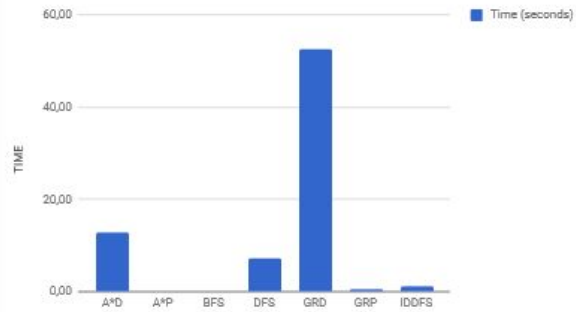


## Nivel 2

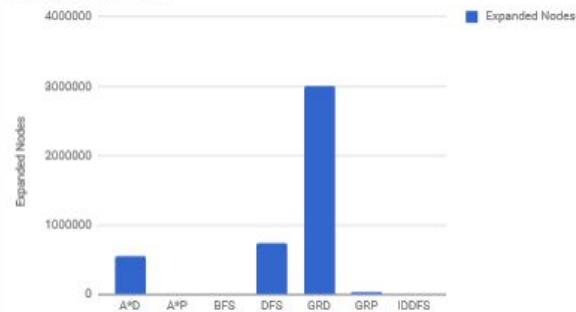
	A*D	A*P	BFS	DFS	GRD	GRP	IDDFS
Depth	12	12	-	20	20	12	12
Time (seconds)	12,96	0,10	-	7,15	52,68	0,56	1,26
Expanded Nodes	551057	6746	-	745852	3000334	29513	12084
Frontier Nodes	1074723	23500	-	52	865989	26166	35
Generated nodes	2249971	34382	-	3470238	12557538	107476	57667

# Nivel 2

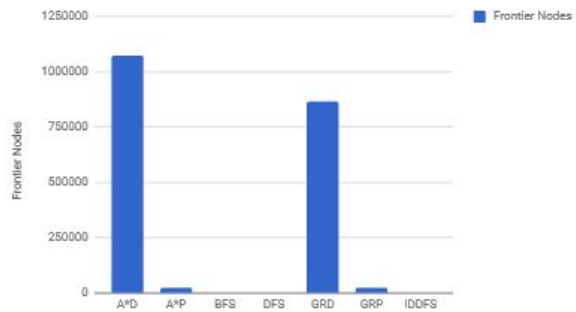
TIME



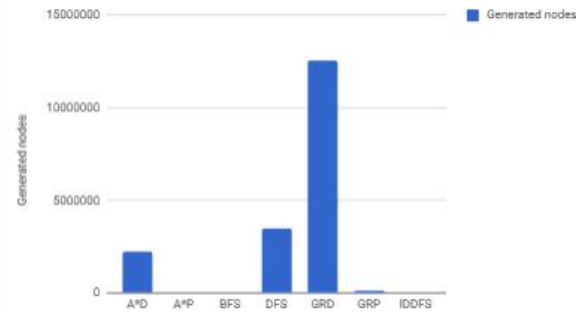
Expanded Nodes



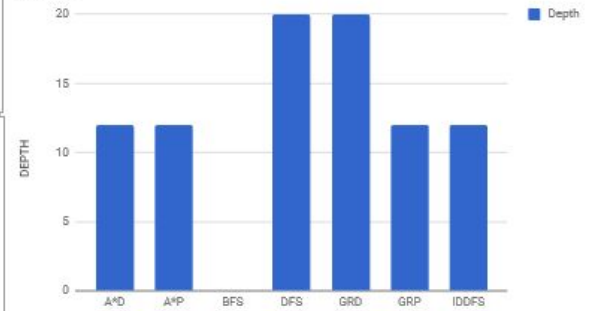
Frontier Nodes



Generated nodes



DEPTH

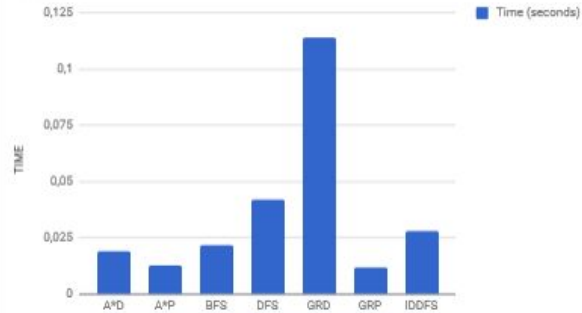


## Nivel 3

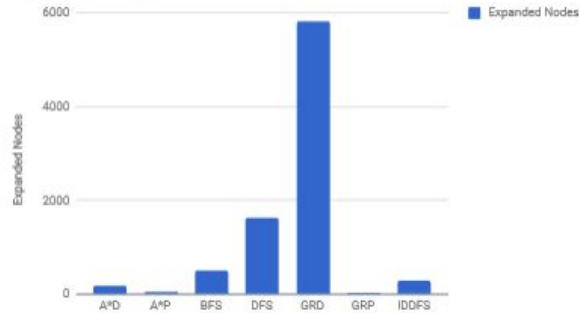
	A*D	A*P	BFS	DFS	GRD	GRP	IDDFS
Depth	5	5	5	7	15	7	5
Time (seconds)	0,019	0,013	0,022	0,042	0,114	0,012	0,028
Expanded Nodes	186	60	506	1631	5832	37	298
Frontier Nodes	391	262	1557	31	1513	90	22
Generated nodes	769	347	2737	6731	23081	145	1523

# Nivel 3

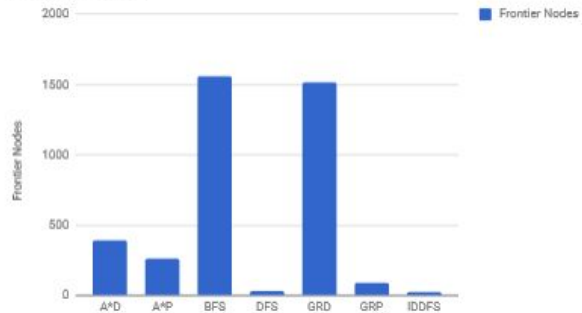
TIME



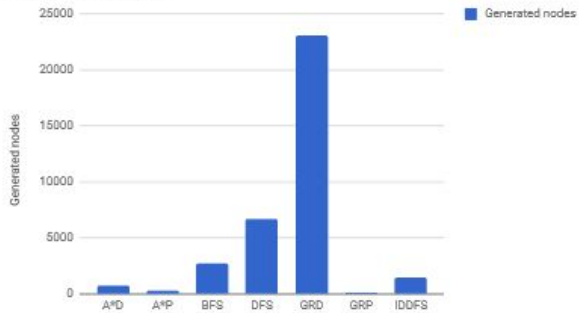
Expanded Nodes



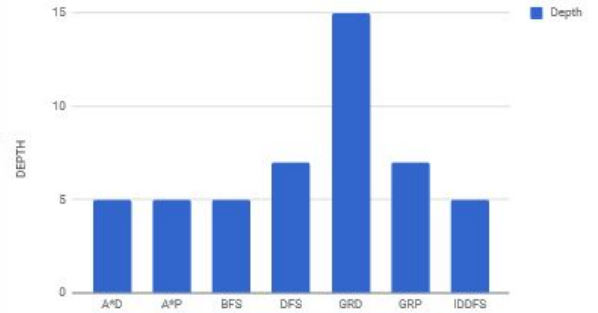
Frontier Nodes



Generated nodes



DEPTH

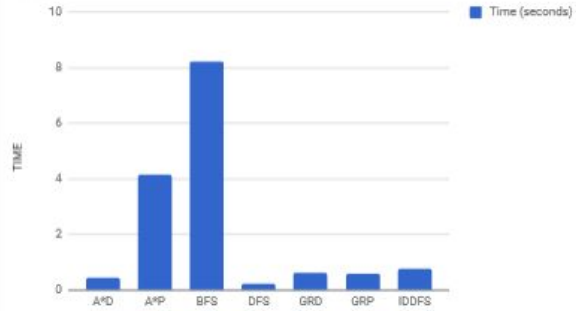


## Nivel 4

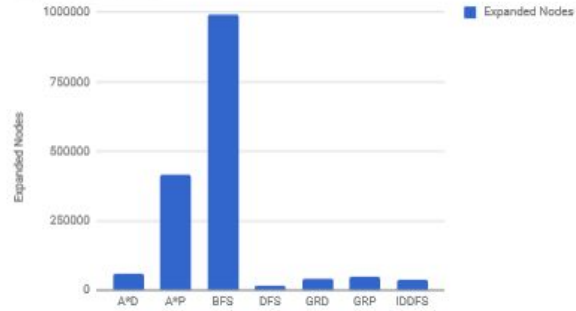
	A*D	A*P	BFS	DFS	GRD	GRP	IDDFS
Depth	12	12	12	58	24	34	12
Time (seconds)	0,453	4,163	8,22	0,227	0,629	0,594	0,788
Expanded Nodes	58370	416753	993732	16600	40384	46921	37657
Frontier Nodes	95213	357004	858127	160	13842	16733	29
Generated nodes	221484	1215284	2749620	58197	153807	175899	148996

# Nivel 4

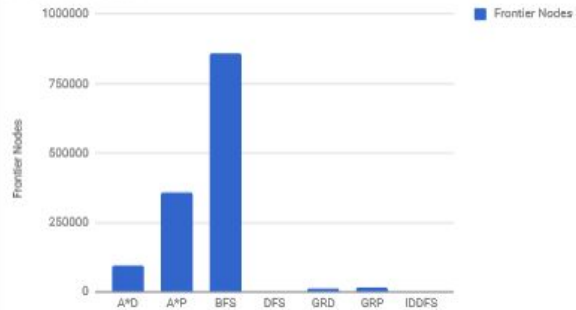
TIME



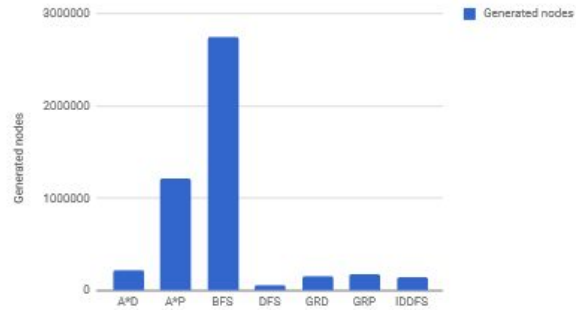
Expanded Nodes



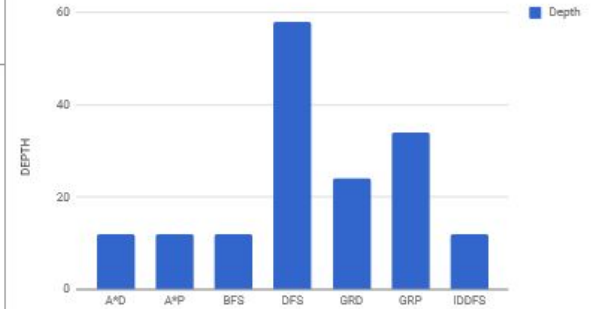
Frontier Nodes



Generated nodes



DEPTH



# Conclusiones

- Según la circunstancia hay algoritmos mejor que otros.
- Se observó que una mala heurística puede dañar los resultados de la búsqueda.