Nama : Ivan Andrianto
NIM : FIDO 18027
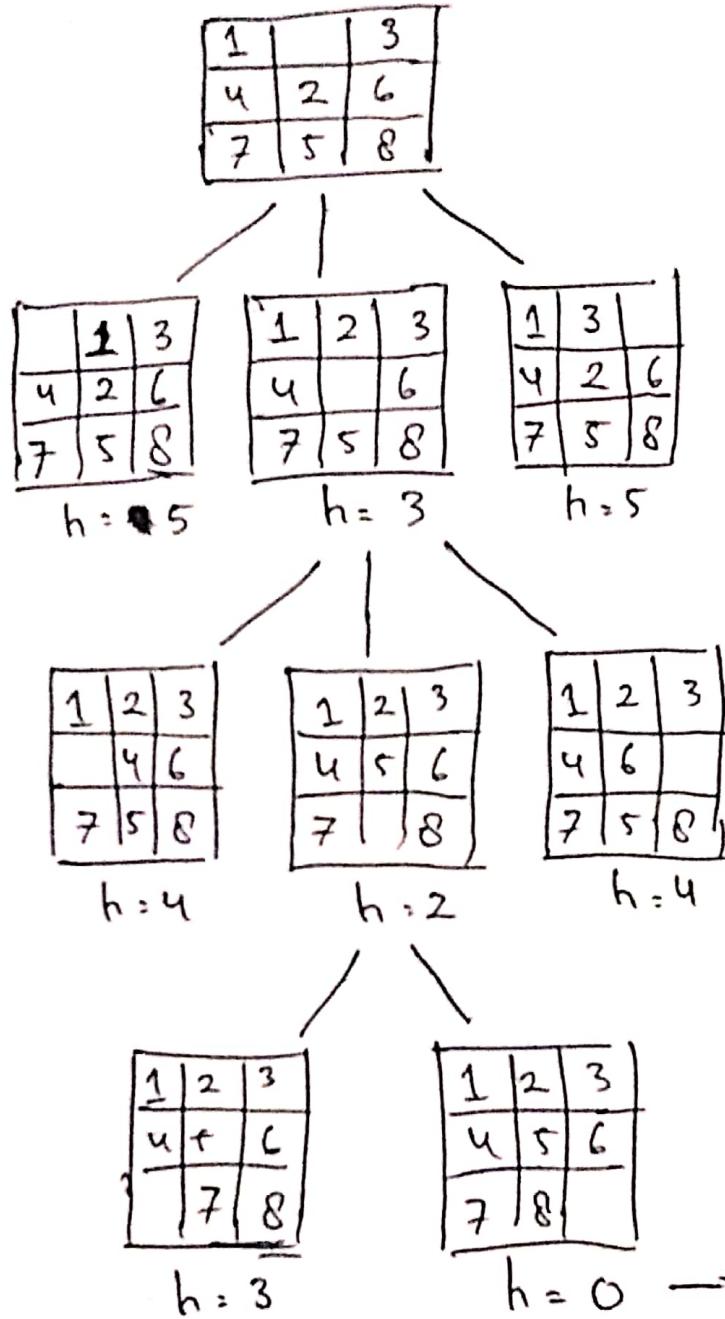Kelas : B

Tugas 2 AI

1.

8-puzzle search tree.

Initial state:
```
1 |   | 3
4 | 2 | 6
7 | 5 | 8
```

→ kiri
```
  | 1 | 3
4 | 2 | 6
7 | 5 | 8
```

↓ bawah
```
1 | 2 | 3
4 |   | 6
7 | 5 | 8
```

→ kanan
```
1 | 3 |
4 | 2 | 6
7 | 5 | 8
```

kiri ↓ bawah:
```
4 | 1 | 3
  | 2 | 6
7 | 5 | 8
```

From middle:
kiri:
```
1 | 2 | 3
  | 4 | 6
7 | 5 | 8
```

bawah:
```
1 | 2 | 3
4 | 5 | 6
7 |   | 8
```

kanan:
```
1 | 2 | 3
4 | 6 |
7 | 5 | 8
```

kanan bawah:
```
1 | 3 | 6
4 | 2 |
7 | 5 | 8
```

bawah → kiri:
```
1 | 2 | 3
  | 4 | 5 | 6
  | 7 | 8
```

bawah → kanan:
```
1 | 2 | 3
4 | 5 | 6
7 | 8 |
```
→ Goal state
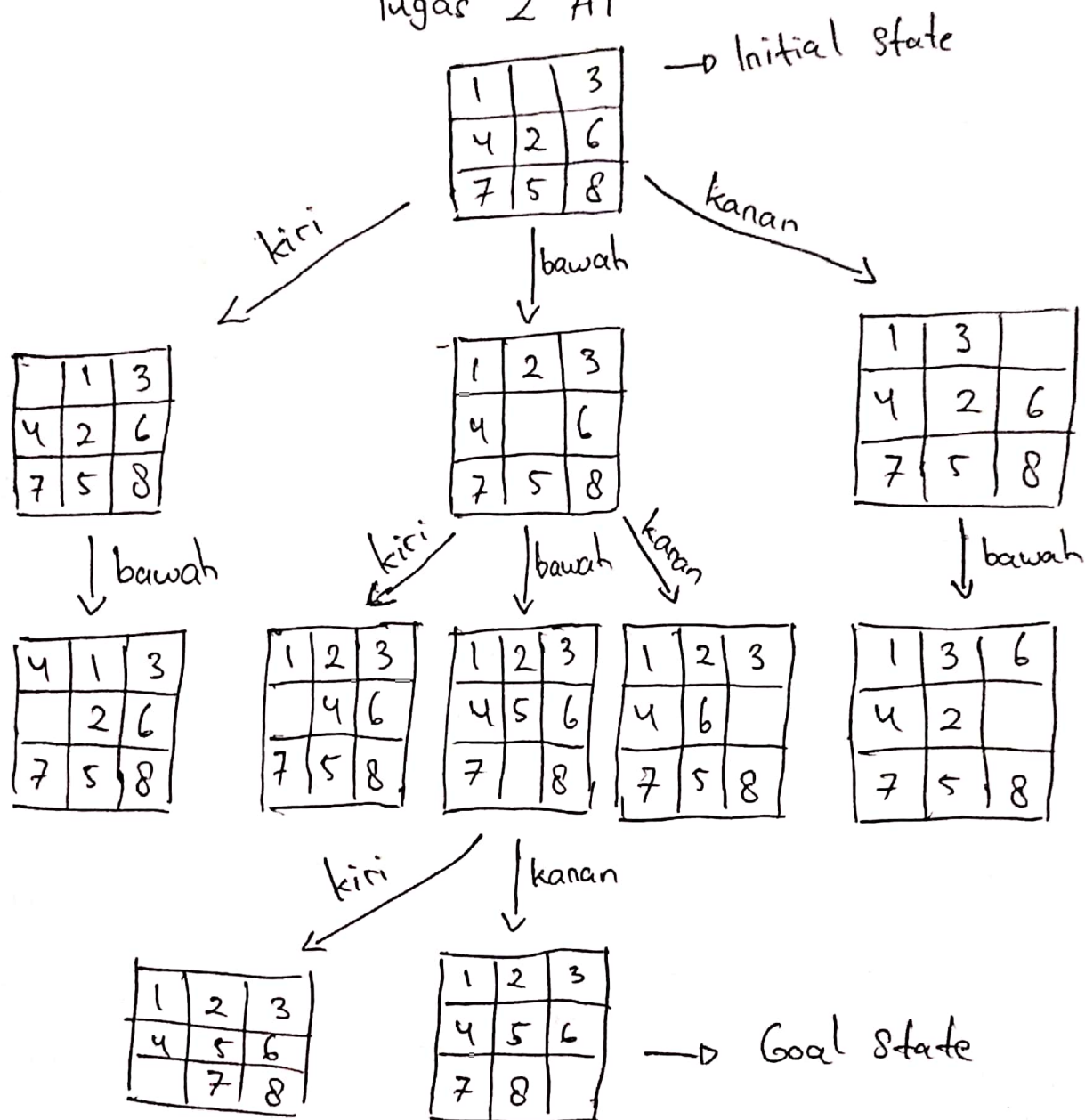
2. Ket: h = jumlah yang menempati posisi yang salah

Root state:

1		3
4	2	6
7	5	8

Children:

1	3			1	2	3		1	3	
4	2	6		4		6		4	2	6
7	5	8		7	5	8		7	5	8

h : 5   h = 3   h : 5

1	2	3		1	2	3		1	2	3
	4	6		4	5	6		4	6	
7	5	8		7		8		7	5	8

h : 4   h : 2   h : 4

1	2	3		1	2	3
4	5	6		4	5	6
	7	8		7	8	

h : 3   h = 0 → Goal state

3. **a) UCS**

- $\underline{S} \to$
- $\underline{A}_{S(10)}, E_{S(10)}, B_{S(25)}, C_{S(30)}, D_{S(35)} \to$
- $\underline{E}_{S(10)}, B_{SA(20)}, B_{S(25)}, C_{S(30)}, D_{S(35)}, G_{SA(100)} \to$
- $\underline{B}_{SA(20)}, B_{S(25)}, D_{SE(25)}, C_{S(30)}, J_{SE(30)}, D_{S(35)}, G_{SA(100)} \to$
- $\underline{B}_{S(25)},\quad D_{SE(25)}, F_{SAB(25)}, C_{S(30)}, J_{SE(30)}, D_{S(35)}, K_{SAB(70)}$
  $, G_{SA(100)} \to$
- $\underline{F}_{SAB(25)}, C_{S(30)}, J_{SE(30)}, D_{S(35)}, H_{SED(50)}, K_{SAB(70)}, L_{SED(77)}, G_{SA(100)} \to$
- $\underline{C}_{S(30)}, J_{SE(30)}, D_{S(35)}, H_{SED(50)}, K_{SABF(65)}, K_{SAB(70)}, L_{SED(77)}, G_{SA(100)} \to$
- $\underline{J}_{SE(30)}, D_{S(35)}, H_{SED(50)}, K_{SABF(65)}, H_{SC(70)}, K_{SAB(70)}, L_{SED(77)}, G_{SA(100)} \to$
- $\underline{D}_{S(35)}, H_{SED(50)}, K_{SABF(65)}, H_{SC(70)}, K_{SAB(70)}, M_{SEJ(70)}, L_{SED(77)}, G_{SA(100)} \to$
- $\underline{K}_{SABF(65)}, H_{SC(70)}, K_{SAB(70)}, M_{SEJ(70)}, L_{SEDH(75)}, L_{SED(77)}, G_{SA(100)} \to$
- $\underline{H}_{SC(70)}, K_{SAB(70)}, \underline{M}_{SEJ(70)}, L_{SEDH(65)}, L_{SED(77)}, G_{SABFK(95)}, G_{SA(100)} \to$
- $\underline{L}_{SEDH(65)}, L_{SED(77)}, G_{SABFK(95)}, G_{SA(100)}, G_{SEJM(150)} \to$
- $\underline{L}_{SED(77)}, G_{SABFK(95)}, G_{SA(100)}, G_{SEDHL(105)}, G_{SEJM(150)} \to$

G ditemukan : Lintasan $\to$ SABFKG, cost = 95
$\qquad\qquad\qquad$ Jalur $\to$ SAEBDFCJHKMLG

b. Simple Hill Climbing:

Dari S: A, (B), C, D, E
$\qquad$ 80 $\quad$ 80 $\;$ 60 $\;$ 70 $\;$ 85 $\;$ 74

Dari B: F, (K)$\qquad$ Lintasan: SBKG, Cost: 105
$\qquad$ 60 $\;$ 70 $\;$ 30

Dari K: (G)
$\qquad$ 30 $\;\;$ 0

c. Steepest Hill Climbing

Dari S: A, (B) C, D, E
$\qquad$ 80 $\;$ 80 $\;$ 60 $\;$ 70 $\;$ 85 $\;$ 74

Dari B: F, (K)$\qquad$ Lintasan : SBKG, Cost: 105
$\qquad$ 60 $\;$ 70 $\;$ 30

Dari K: (G)
$\qquad\qquad\;$ 0