

1. Task 1.1

- $a^*b^*c^*d$
- $^0[1-9]d?d?(,d\backslash d)^*$
- $^a-z+(\backslash s?[a-z])^*$

2. Task 1.2

- $a.a^* + b.b^*$
- $(a + b)^*a.b.b$

3. Task 1.3

- $e\text{-closure}(0) = \{0, 1, 9\}$ since we can reach those without input
- $e\text{-closure}(3) = \{3, 4, 5\}$ since we can reach those from state 3 with no input
- $e\text{-closure}(2) = \{2, 3, 4, 6\}$ since we can reach state 2 or state 4 from 2 without taking input and then we can also go to state 3,4,6 from state 3

4. Task 1.4

a.

	a	b
A	B	C
B	D	B
C	E	F
<u>D</u>	D	B
E	G	F
<u>F</u>	E	F
<u>G</u>	G	F

- A: $\{0,1,9\}$
 B: $\{10\}$
 C: $\{2,3,4,6\}$
D: $\{10,11\}$
 E: $\{2,3,4,6,7\}$
F: $\{2,3,4,5,6\}$
G: $\{2,3,4,6,7,8\}$

D,F,G are final states because they have the final states of DFA

5. Task 1.5

- It does not have an error state because the DFA accepts all strings that have a and b. However, the e string will not be accepted.

6. Task 4.1

- A couple days, I struggled and needed help

7. Task 4.2

- Pradyo helped me, and I used the library functions link on page 1 of the pdf