Regular Expression
Describe the language denoted by the following regular expression

- \( a(a \mid b)^*a \)
  
  Answer: 
  *String of a`s and b`s begin and end with a*

- \((a \mid b)^* a(a \mid b) (a \mid b)\)
  
  Answer: 
  *String of a`s and b`s, with an a in the 3\(^{rd}\) letter from the right.*
Cont...

• \((a \mid b)^*b (a \mid b)^* b (a \mid b)^*\)

Answer:

*String of a`s and b`s that contain at least two b`s*
Write regular definition for the following languages:

- All string of lowercase letters that contain the five vowels in order.

Answer:

\[ L \rightarrow [b-d f-h j-n p-t v-z] \]

\[ \text{String} \rightarrow L^*(a|A)^+ L^*(e|E)^+ L^*(i|I)^+ \]
\[ L^*(o|O)^+ L^*(u|U)^+ L^* \]
• Comments, consisting of a string surrounded by /* and */, without an intervening *//, unless it is inside double-quotes(“)
Cont..

• String of a`s and b`s that contains odd number of b

Answer:

\[ a^*b(a^*ba^*b)^*a^* \]
Cont..

- String of a`s and b`s that contains just two or three b`s

Answer:

\[ a^*ba^*ba^*b?a^* \]
• All strings of a’s and b’s that do not contain the substring abb.

Answer:

$$b^* (a (\varepsilon|b))^*$$
• All strings of a’s and b’s with an even number of a’s.

Answer:

\[ b^*(a \ b^* \ a \ b^*)^* \]
Cont..

- All strings of a’s and b’s that contain at most two b's.

Answer:

$$a^* (\varepsilon | b) a^* (\varepsilon | b) a^*$$
• All strings of a’s and b’s that do not contain the subsequence abb.

Answer:
\[ b^* \ a^* (\varepsilon | b) \ a^* \]