

Quiz 2 Compilers

Give a regular expression that defines the language containing all strings that have an even (but nonzero) number of 'a' characters followed by one, two, or three 'b' characters. For example, "aab", "aabb", "aaaab", and "aaaabbb" are all strings in this language.

- ☐ a. $(aa)^* (b \mid bb \mid bbb)$
- ☒ b. $(aa)^+ b \mid (aa)^+ bb \mid (aa)^+ bbb$
- ☐ c. $(aa)^* b \mid (aa)^* bb \mid (aa)^* bbb$
- ☒ d. $(aa)^+ (b \mid bb \mid bbb)$

Give a regular expression for the language of strings over $\{0,1\}$ that do contain two independent double 1's.

- ☐ a. $(0 \mid 1)^* 11 (0 \mid 1)^* 11 (0 \mid 1)^*$
- ☐ b. $0^* 11 0^* 11 0^*$
- ☐ c. $(0 \mid 010)^* 11 (0 \mid 010)^* 11 (0 \mid 010)^*$
- ☒ d. $(0 \mid 010)^* 11 (0 \mid 010)^+ 11 (0 \mid 010)^*$

Give a regular expression for the language of strings over $\{0,1\}$ that do contain any contiguous string of 1's of length greater than 2.

- ☐ a. $(0 \mid 01 \mid 011)^* (\epsilon \mid 1 \mid 11)$
- ☒ b. $(0 \mid 10 \mid 110)^* (\epsilon \mid 1 \mid 11)$
- ☐ c. $(\epsilon \mid 1 \mid 11) (0 \mid 10 \mid 110)^*$
- ☒ d. $(\epsilon \mid 1 \mid 11) (0 \mid 01 \mid 011)^*$

Give a regular expression for the language of strings over $\{0,1\}$ that do contain 10 or 01.

- ☐ a. $(0 \mid 1)^*$
- ☐ b. $(10 \mid 01)^+$
- ☒ c. $(0 \mid 1)^* 10 (0 \mid 1)^* \mid (0 \mid 1)^* 01 (0 \mid 1)^*$
- ☒ d. $(0 \mid 1)^* (10 \mid 01) (0 \mid 1)^*$