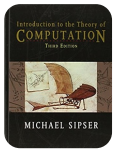
Exercício 14

Capítulo 1, Página 85



Introduction to the Theory of Computation

ISBN: 9781133187790

Índice

Solução Certificado Solução fornecida há 2 anos

Passo 1 1 de 5

Part (a)

The explanation for swapping of accept and non-accept states can be found is solution to *Exercise 1.5*.

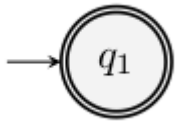
Language is regular if and only if some DFA recognizes it. The conclusion above guarantees that if there is DFA which recognizes a language, then there must be a DFA which recognizes its complement. Hence, complement of any regular language is also regular, which exactlu means that class of regular languages is closed under complement.

Passo 2 2 de 5

Part (b)

```
Let's take the simplest possible example. Consider the following
```

Passo 3 3 de 5



Passo 4 4 de 5

Which language does this NFA recognize? Well, there is really no way to go from start state, so it can only accept string which doesn't make it go anywhere. This can only be empty string ε. Hence the language which this NFA recognizes is $\{\varepsilon\}$.

What happens to this NFA if we swap its accepting and non-accepting states? Not much of course, it just loses its only accept state. That means that it can not accept any string, so the language it recognizes is empty set $\emptyset$. Since this is obviously not the complement of previous language, we must admit that our construction did not produce the expected result.

Does this mean that we can say that class of languages recognized by NFAs is not closed under complement? Not so fast. Remember magnificent **Theorem 1.39**, which implies that this class of languages is the same as the class from part a. Hence the conclusion from above is valid here as well.

Resultado 5 de 5

Part (a) is already answered in *Exercise 1.5*, and we provide a simple example for part (b).

‹ Exercício 13

Avaliar esta solução

☆ ☆ ☆ ☆ ☆

Exercício 15 ›

Privacidade Termos de serviço Português (BR)