

TITLE TITLE TITLE

TITLE TITLE

author

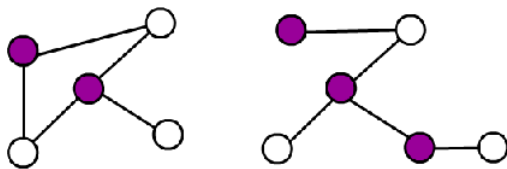
xxxxxxx@xxx.com

2022 年 5 月 22 日

BLOCK & IMAGE¹

DEFINITION

A vertex cover of a graph is a set of vertices such that each edge of the graph is incident to at least one vertex of the set.



Minimum Vertex Cover

¹FOOTNOTE

CODE EXAMPLE

```
1 bool dfs(int x) {
2     for (auto &y:e[x])
3         if (!used[y]) {
4             used[y] = true;
5             if (link[y] == -1 || dfs(link[y])) {
6                 link[y] = x;
7                 return true;
8             }
9         }
10    return false;
11 }
```

```
1 int hungary() {
2     int res = 0;
3     memset(link, -1, sizeof(link));
4     for (int i = 1; i <= n; ++i) {
5         memset(used, false, sizeof(used));
6         if (dfs(i)) ++res;
7     }
8     return res;
9 }
```

PSEUDOCODE 伪代码

- numerical analysis, computational geometry...
- time complexity $O(\log((R - L)/\epsilon))$

```
1: procedure BINARYSEARCHONREALNUMBERS( $L, R$ )
2:   while  $R - L > \epsilon$  do
3:      $mid \leftarrow (L + R)/2$ 
4:     if LESSTHANANS( $mid$ ) then
5:        $L \leftarrow mid$ 
6:     else
7:        $R \leftarrow mid$ 
return  $L$ 
```

PAUSE

- 测试一下`pause`语句的功能

任务

统计及格学生的平均成绩 (不计不及格的学生和分数)

```
1 scores = [76, 83, 89, 45, 67, 89, 85, 77]
2 sum_, count = 0, 0
3 for score in scores:
4     if score < 60:
5         continue
6     sum_ += score
7     count += 1
8 print('平均成绩为:', sum_/count)
```

```
1 scores = [76, 83, 89, 45, 67, 89, 85, 77]
2 sum_, count = 0, 0
3 for score in scores:
4     if score >= 60:
5         sum_ += score
6         count += 1
7 print('平均成绩为:', sum_/count)
```

PAUSE

- 测试一下 `pause` 语句的功能

任务

统计及格学生的平均成绩 (不计不及格的学生和分数)

```
1 scores = [76, 83, 89, 45, 67, 89, 85, 77]
2 sum_, count = 0, 0
3 for score in scores:
4     if score < 60:
5         continue
6     sum_ += score
7     count += 1
8 print('平均成绩为:', sum_/count)
```

```
1 scores = [76, 83, 89, 45, 67, 89, 85, 77]
2 sum_, count = 0, 0
3 for score in scores:
4     if score >= 60:
5         sum_ += score
6         count += 1
7 print('平均成绩为:', sum_/count)
```

PAUSE

- 测试一下 `pause` 语句的功能

任务

统计及格学生的平均成绩 (不计不及格的学生和分数)

```
1 scores = [76, 83, 89, 45, 67, 89, 85, 77]
2 sum_, count = 0, 0
3 for score in scores:
4     if score < 60:
5         continue
6     sum_ += score
7     count += 1
8 print('平均成绩为:', sum_/count)
```

```
1 scores = [76, 83, 89, 45, 67, 89, 85, 77]
2 sum_, count = 0, 0
3 for score in scores:
4     if score >= 60:
5         sum_ += score
6         count += 1
7 print('平均成绩为:', sum_/count)
```

PAUSE

- 测试一下 `pause` 语句的功能

任务

统计及格学生的平均成绩 (不计不及格的学生和分数)

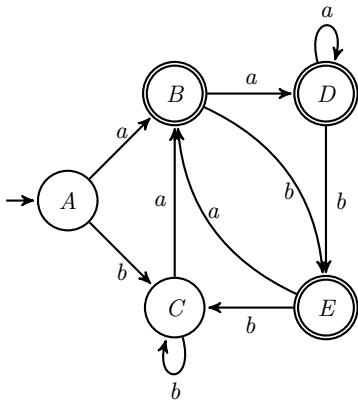
```
1 scores = [76, 83, 89, 45, 67, 89, 85, 77]
2 sum_, count = 0, 0
3 for score in scores:
4     if score < 60:
5         continue
6     sum_ += score
7     count += 1
8 print('平均成绩为:', sum_/count)
```

```
1 scores = [76, 83, 89, 45, 67, 89, 85, 77]
2 sum_, count = 0, 0
3 for score in scores:
4     if score >= 60:
5         sum_ += score
6         count += 1
7 print('平均成绩为:', sum_/count)
```

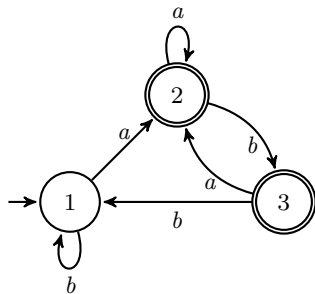

任务

将正则表达式 $(a \mid b)^* a(a \mid b \mid \epsilon)$ 转化成一个 DFA 并最小化

先构造出 NFA，之后使用子集构造法转 DFA



最小化 $1 : \{A, C\}, 2 : \{B, D\}, 3 : \{E\}$



本页的字体大小为 12pt, vskip 为 14pt

- 欧拉公式:

$$e^{i\pi} + 1 = 0$$

- 拉格朗日插值:

$$A(x) = \sum_{k=0}^{n-1} y_k \frac{\prod_{j \neq k} (x - x_j)}{\prod_{j \neq k} (x_k - x_j)}$$

TABLE

ALGORITHM	TIME (WORST)	TIME (AVG.)	SPACE	STABLE	IN-PLACE
insertion sort	$\Theta(n^2)$	$\Theta(n^2)$	$O(1)$	yes	yes
merge sort	$\Theta(n \log n)$	$\Theta(n \log n)$	$O(N)$	yes	no
heapsort	$O(n \log n)$	$O(n \log n)$	$O(1)$	no	yes
quick sort	$\Theta(n^2)$	$\Theta(n \log n)$	$O(N)$	no	yes
			$O(\log N)$		
counting sort	$\Theta(k + n)$	$\Theta(k + n)$	$O(k)$	yes	no
radix sort	$\Theta(d(k + n))$	$\Theta(d(k + n))$	$O(k + n)$	-	no
bucket sort	$\Theta(n^2)$	$\Theta(n)$	$O(n)$	yes	no

OTHER TABLES

i	0	1	2	3	4	5
s	\$	#	a	#	a	#

表 1: A realistic table I have built

Small col	Big col		
Grouped items	Item 1		
	Item 2		
Usual row	Spam	Bacon	Eggs