



上海大学

Shanghai University

THE TITLE OF YOUR THESIS OR  
DISSERTATION SHOULD BE TYPED HERE

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# Overview

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- The trivial Set Cover algorithm has running time of  $\mathcal{O}(2^n)$ .

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- bla, bla, bla...

# Lists - Itemize

- Point A
- Point B
  - part 1
  - part 2
- Point C
- Point D

# Lists - Itemize with Pause

# Lists - Itemize with Pause

- Point A



# Lists - Itemize with Pause

- Point A
- Point B

# Lists - Itemize with Pause

- Point A
- Point B
  - part 1

# Lists - Itemize with Pause

- Point A
- Point B
  - part 1
  - part 2

# Lists - Itemize with Pause

- Point A
- Point B
  - part 1
  - part 2
- Point C

# Lists - Itemize with Pause

- Point A
- Point B
  - part 1
  - part 2
- Point C
- Point D

# Lists - Enumerate

- ➊ Point A
- ➋ Point B
  - ➊ part 1
  - ➋ part 2
- ➌ Point C
- ➍ Point D

# Lists - Enumerate (Roman Numerals)

- ❶ Point A
- ❷ Point B
  - ❶ part 1
  - ❷ part 2
- ❸ Point C
- ❹ Point D

# Columns

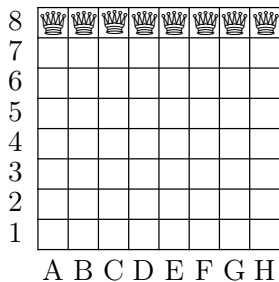
Lorem ipsum dolor sit amet,  
consectetur adipisicing elit, sed  
do eiusmod tempor incididunt  
ut labore et dolore magna  
aliqua.

Lorem ipsum dolor sit amet,  
consectetur adipisicing elit, sed  
do eiusmod tempor incididunt  
ut labore et dolore magna  
aliqua.

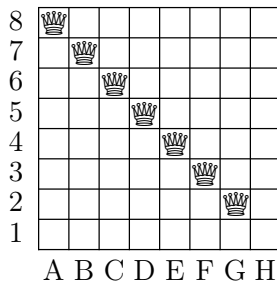
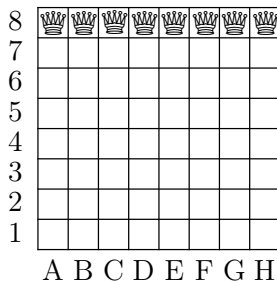


# Domination on a Chessboard

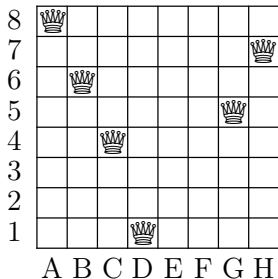
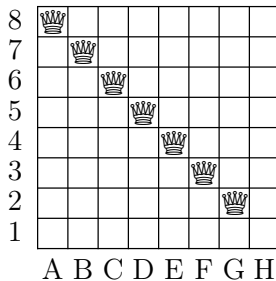
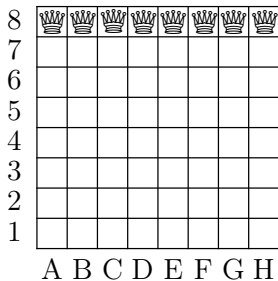
# Domination on a Chessboard



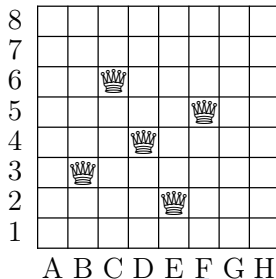
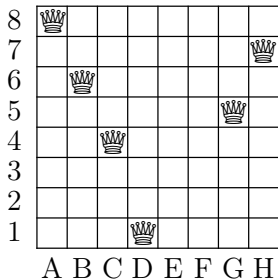
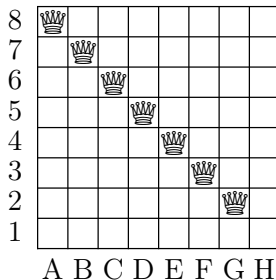
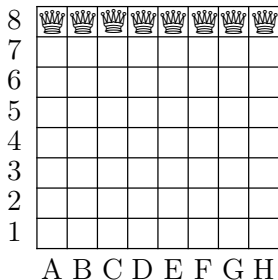
# Domination on a Chessboard



# Domination on a Chessboard



# Domination on a Chessboard



# Single figure with caption



Figure: This is an caption!

# Description Environment

**API** Application Programming Interface

**LAN** Local Area Network

**ASCII** American Standard Code for Information  
Interchange

# Tables

Competitor Name	Swim	Cycle	Run	Total
John T	13:04	24:15	18:34	55:53
Norman P	8:00	22:45	23:02	53:47
Alex K	14:00	28:00	n/a	n/a
Sarah H	9:22	21:10	24:03	54:35

**Table:** Triathlon results



# Blocks

## Block Title

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

## Alert Block Title

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

# Definition

Then there's the definition environment which produces a standard ColorA color block but with the title already specified as 'definition'.

```
\begin{definition}
```

A prime number is a number that...

```
\end{definition}
```

## Definition

A prime number is a number that...

# Example

Next there's the example environment which produces a green block with the title 'Example'.

```
\begin{example}  
Lorem ipsum dolor sit amet...  
\end{example}
```

## Example

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua.

# Theorem

There is also a group of blocks that are especially useful for presenting mathematics. For example the ‘theorem’ environment, the ‘corollary’ environment and the ‘proof’ environment.

```
\begin{theorem}[Pythagoras]
```

$$a^2 + b^2 = c^2$$

```
\end{theorem}
```

```
\begin{corollary}
```

$$x + y = y + x$$

```
\end{corollary}
```

```
\begin{proof}
```

$$\omega + \phi = \epsilon$$

```
\end{proof}
```

# Theorem Blocks

Theorem (Pythagoras)

$$a^2 + b^2 = c^2$$

Corollary

$$x + y = y + x$$

Proof.

$$\omega + \phi = \epsilon$$



# Hyperlink

Before we can create any hyperlinks we need to tag the frames we want to link to using the ommand.

click here [section 1 page](#) [▶ columns page](#) [▶▶ pictures page](#) [◀ pictures page](#)

# A trivial Set Cover algorithm

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## Algorithm 1: $\text{MSC}(\mathcal{S}, \mathcal{U})$

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**Input** : A set cover instance  $(\mathcal{S}, \mathcal{U})$  and a variable  $\mathcal{S}_{\text{dom}}$ .

**Output** : A minimum set cover of  $(\mathcal{S}, \mathcal{U})$ .




```

1 if  $\mathcal{S} = \emptyset$  then
2   return  $\emptyset$ ;
3 Let  $S \in \mathcal{S}$  be a set of maximum cardinality;
4  $\mathcal{C}_1 = \{S\} \cup \text{MSC}(\{S' \setminus S \mid S' \in \mathcal{S} \setminus \{S\}\}, \mathcal{U} \setminus S)$ ;
5  $\mathcal{C}_2 = \text{MSC}(\mathcal{S} \setminus \{S\}, \mathcal{U})$ ;
6  $\mathcal{S}_{\text{dom}} \leftarrow \emptyset$ ;
7 if  $\mathcal{U} \subseteq \mathcal{C}_1$  then
8    $\mathcal{S}_{\text{dom}} \leftarrow \mathcal{C}_1$ ;
9   if  $\mathcal{U} \subseteq \mathcal{C}_2$  then
10     if  $|\mathcal{C}_2| < |\mathcal{C}_1|$  then
11        $\mathcal{S}_{\text{dom}} \leftarrow \mathcal{C}_2$ ;
12 return  $\mathcal{S}_{\text{dom}}$ ;

```

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# References

-  FOMIN FV, GRANDONI F & KRATSCH D, 2009, *A note on the complexity of minimum dominating set* , Journal of Discrete Algorithms, **4(2)**, pp. 209–214.
-  GROBLER PJP & MYNHARDT CM, 2009, *Secure domination critical graphs*, Discrete Mathematics, **309**, pp. 5820–5827.
-  VAN ROOIJ JMM & BODLAENDER HL, 2011, *Exact algorithms for dominating set*, Discrete Applied Mathematics, **159**, pp. 2147–2164.