

# **Research Methods in IT**

## Presentation

**Tomás O'Malley , Dylan Creaven**

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# Background

## Theorem

*Authors : Tomas O'Malley and Dylan Creaven . Fourth year Software Development @ Galway Mayo institute of Technology .*

## Theorem

*This presentation is a for the module Research Methods in IT . We both agreed to base our project on the first female winner of the Turing Award Frances Allen. who recently passed away this year.*



# Mathematics

Theorem (Fermat's little theorem)

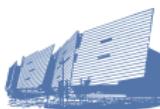
*For a prime  $p$  and  $a \in \mathbb{Z}$  it holds that  $a^p \equiv a \pmod{p}$ .*

Proof.

The invertible elements in a field form a group under multiplication. In particular, the elements

$$1, 2, \dots, p - 1 \in \mathbb{Z}_p$$

form a group under multiplication modulo  $p$ . This is a group of order  $p - 1$ . For  $a \in \mathbb{Z}_p$  and  $a \neq 0$  we thus get  $a^{p-1} = 1 \in \mathbb{Z}_p$ . The claim follows. ■



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# Mathematics

## Example

The function  $\varphi: \mathbb{R} \rightarrow \mathbb{R}$  given by  $\varphi(x) = 2x$  is continuous at the point  $x = \alpha$ , because if  $\epsilon > 0$  and  $x \in \mathbb{R}$  is such that  $|x - \alpha| < \delta = \frac{\epsilon}{2}$ , then

$$|\varphi(x) - \varphi(\alpha)| = 2|x - \alpha| < 2\delta = \epsilon.$$



# Highlighting

# Highlighting

Sometimes it is useful to **highlight** certain words in the text.

## Important message

If a lot of text should be **highlighted**, it is a good idea to put it in a box.

It is easy to match the colour theme.



# Lists

- Bullet lists are marked with a red box.
- 1 Numbered lists are marked with a white number inside a red box.

Description highlights important words with red text.

Items in numbered lists like 1 can be referenced with a red box.

## Example

- Lists change colour after the environment.



# Effects

## 1 Effects that control

Use textblock for arbitrary placement of objects.



# Effects

- 1 Effects that control
- 2 when text is displayed

Use **textblock** for arbitrary placement of objects.

## Theorem

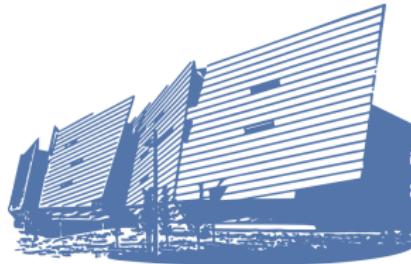
*This theorem is only visible on slide number 2.*



# Effects

- 1 Effects that control
- 2 when text is displayed
- 3 are specified with <> and a list of slides.

Use **textblock** for arbitrary placement of objects.



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# Effects

- 1 Effects that control
- 2 when text is displayed
- 3 are specified with <> and a list of slides.

Use **textblock** for arbitrary placement of objects.

It creates a box with the specified width (here in a percentage of the slide's width) and upper left corner at the specified coordinate (x, y) (here x is a percentage of width and y a percentage of height).



# References I

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# References II

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