

# Six Degrees of Wikipedia – website version

## **1: Explanation to students**

“Six Degrees of Wikipedia” is a game where players have to go from one wikipedia page to another wikipedia page by only clicking the pages hyperlinks. The goal is to reach the target destination in 6 clicks or less.

## **2: Let’s play! Here are three challenges**

- Start with “Maccaroni and cheese” and reach “Basketball”
- Start with “Pangyo, Seongnam” and reach “Phoenix (mythology)”
- Bonus: Start with “Phoenix (mythology)” and reach “Pangyo, Seongnam” (the opposite)

Compare successes and list paths on the board.

## **3: Connection with matrices**

Ask why this might be related to matrices...

Question: is the matrix symmetrical?

Let’s look at a simple example: the words are dog, cat, rat and let’s say  $M = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix}$ .

Compute  $M^2$ .

What is the information carried by  $M^2$ ? Explain. Verify the claim.

Justify why it’s true of any  $n \times n$  matrix.

Explain how it generalizes and it’s going to continue to be true for  $M^3$ ,  $M^4$ ...

What does it mean if we start having 2s and 3s in the matrix?

How can we reword the claim of “6 degrees of wikipedia” in the context of matrices.

## **4: Optimal paths with the website**

Go to this webpage: <https://www.sixdegreesofwikipedia.com/>

What’s the ultimate score for the challenges above?

Play around... Share your discoveries.

Who can find two words whose links need the most steps? Can we reach more than 6???