DEFINITION TIME!

- What is a strategy?

From Google:

strategy

/ˈstrætədʒi/ "e"

Noun
1. A plan of action or policy designed to achieve a major or overall aim.
2. The art of planning and directing overall military operations and movements in a war or battle.

Synonyms
strategical - tactics

11/17/2017
“I suggest a new strategy, R2: let the Wookiee win.”

DEFINITION TIME!

• What is an *algorithm*?

From Google:

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al·go·rithm
/ˈal-gəˌrithəm/

Noun
A process or set of rules to be followed in calculations or other problem-solving operations, esp. by a computer.
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LET’S TAKE A TRIP

• Suppose I wanted to go to Washington DC.

• Let’s get directions from google.
  – http://maps.google.com

  – By default it will show me the shortest time.
    • In this case it is 993 miles and Time 14 hours 55 minutes.

LET’S TAKE A TRIP

• Wait! This route has tolls?

• I’m not going to pay tolls. Let’s set the options to avoid tolls.
  – Now it is 1,040 miles and Time 15 hours 39 minutes.

• Let’s take the scenic route and avoid highways as well.
  • Now it is 1,042 miles and Time 21 hours 19 minutes.
LET’S TAKE A TRIP

• Maybe I should walk instead of driving.
  – I’ll select that option:
    • In this case it is 940 miles and Time 310 hours.

• That’s too long, perhaps I’ll bike.
  – I’ll select that option:
    • In this case it is 1,124 miles and Time 94 hours.

WHAT’S THE POINT OF THIS?

• Each set of directions I received took me from the same starting position (Cedar Falls) to the same ending position (Washington D.C.)

• The difference was the strategy that I selected to accomplish getting there.

• The programmers programmed each with a different algorithm to create the directions.
THE STRATEGY DESIGN PATTERN

Problem:

- In some situations you may have different approaches for implementing the same method that you want to use based on the situation.
- In other words, your program needs to respond differently to a method under different situations.
- Can be used in a situation where you wish to change the algorithms employed at different times.

Solution:

Create a Strategy class with a common interface that has sub-classes that implement the various algorithms.

Source: http://java-x.blogspot.com/2006/12/implementing-strategy-pattern-in-java.html
THE STRATEGY DESIGN PATTERN

• Consequences:
  – Enhances encapsulation, by implementing each algorithm in its own class.
  – Completely overhauling your program is easier, simply employ a new Strategy.
  – Allows for clearly understandable code by modeling a family of approaches that can all be used to solve the same problem.
  – Simplifies maintenance as new strategies can be easily added by creating a new subclass and does not affect existing code.

ONE ONLINE EXAMPLE:

Does anyone know Asimov’s Three Laws of Robotics?

A robot may not injure a human being or, through inaction, allow a human being to come to harm.

A robot must obey the orders given to it by human beings, except where such orders would conflict with the First Law.

A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws.

• http://www.oodesign.com/strategy-pattern.html