Școala
informală
de IT

# Introducere in IT

## Programming
## (Algorithms Workshop)

# Curriculum

**1. How an application comes to life?**

- Who are the craftsmen involved?
- How does an application grow?
- When are we ready to ship?

**2. Must-have skills for the journey**

- How computers work?
- What are your basic tools?
- What are applications made of?
- How does information travel through Internet?

# Curriculum

**3. Can you become a developer?**

- Start thinking and speaking like an IT geek!
- You call it a website - this is a perfect mix between HTML, CSS, Javascript
- Everything around us is an object - In machines' world this is called OOP
- You like to keep your stuff well organized - So does an application using databases

**4. … or what about being a tester?**

- Apps crashing, monitors freezing, odd coloring screens, weird behavior… Are all these happening only to me?

**5. Show us your skills, we show you the path**

- Are you amazed of what you've found so far? This was just a glimpse! We help you choose the best path to follow: testing or developing applications

# Workshop

# Workshop

1. Compute the sum of numbers from 1 to n
2. Compute the sum of even numbers from 1 to n
3. Compute the sum of numbers from n to m
4. Compute n!
5. Fibonacci sequence: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34 …
   Compute F(n), knowing that
   F(n) = F(n-1) + F(n-2)
   F(0) = 0
   F(1) = 1

# Workshop

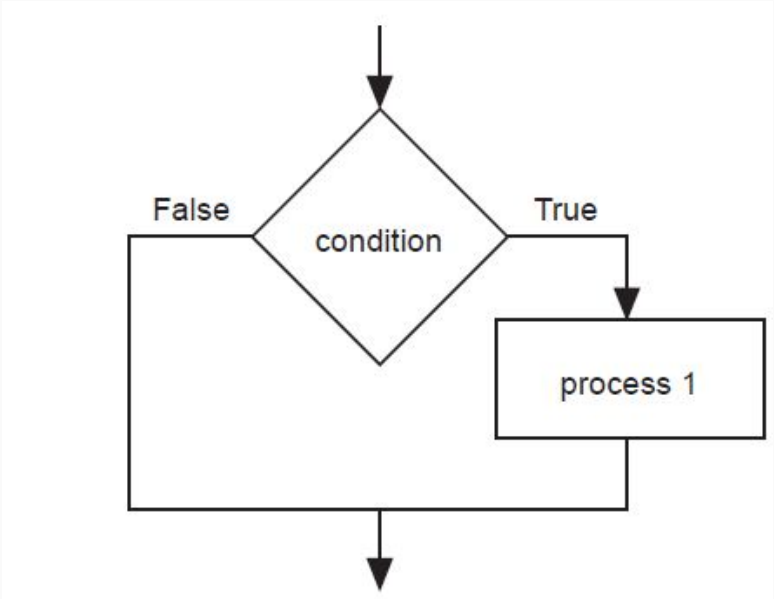
1. Print all the elements of an array
2. Find the maximum number in an array
3. Add an element in an array
    a. at the end
    b. on position k
4. Determine if a string contains a certain character

# Selection (I)

Pseudocode

```
IF condition THEN
    process 1
ENDIF
```

Flowchart

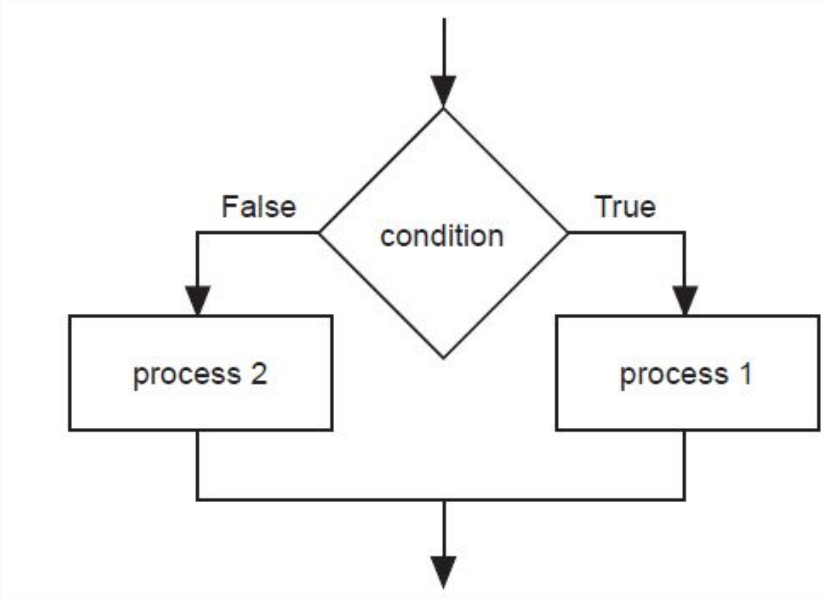


# Selection (II)

Pseudocode

```
IF condition THEN
    process 1
ELSE
    process 2
ENDIF
```

Flowchart

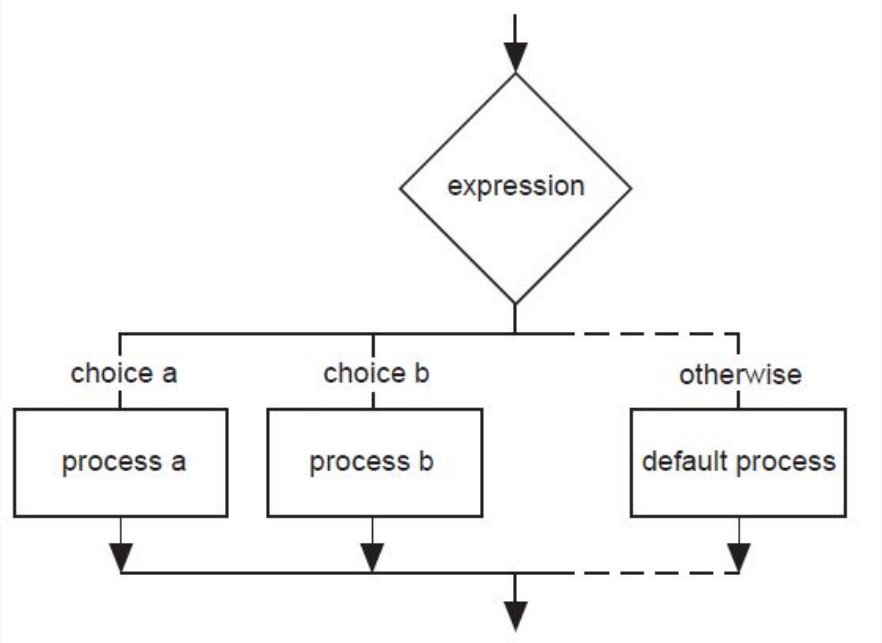


# Selection (III)

Pseudocode

```
SWITCH expression to
    CASE a: process a
    CASE b: process b
        .           .
    DEFAULT: default process
ENDCASE
```

Flowchart

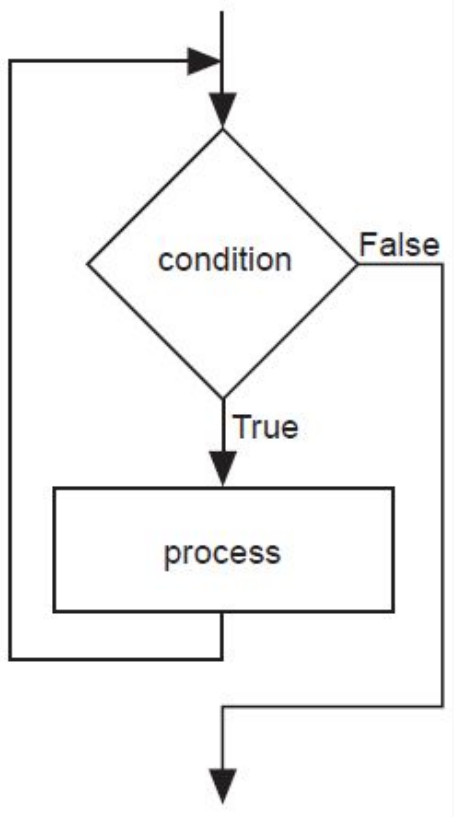


# Repetition (I)

Pseudocode

```
WHILE condition is true
    process
ENDWHILE
```

Flowchart

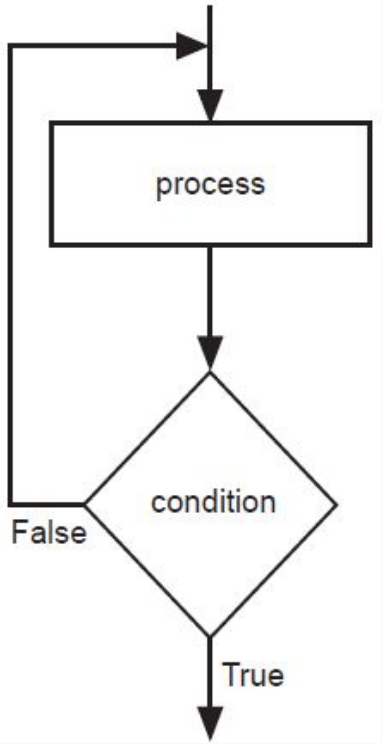


# Repetition (II)

Pseudocode

```
REPEAT
    process
UNTIL condition is true
```

Flowchart



# Resources

Book: Data Structures and Algorithms with JavaScript

Video tutorial: https://www.khanacademy.org/computing/computer-science/algorithms

Reading Tutorial: Algorithms basics

Nice to read: Fibonacci sequence in nature