

 **visual** programming

Array



Bachelor of Information Systems
Institut Teknologi Del



Learning Objective(s)

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This material should address the following question(s).

- What is array and how it is different to variable?
- How to use array correctly?

Discussion Point

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Array:
The Core Concepts.



Problem

- A **to-do list** holds a handful of important agenda (items) we need to do.
- Any addressed item is marked as finished or done.



Distinction between the “**done**” and “undone” items.

An example of a to-do list.

Today's To Do List:

1. Meeting with supervisor. [done]
2. Do Math exercise, due tonight. [done]
3. Group discussion (lunch).
4. Designing the change-password feature.

The number of items are **arbitrary**, but **planned**.

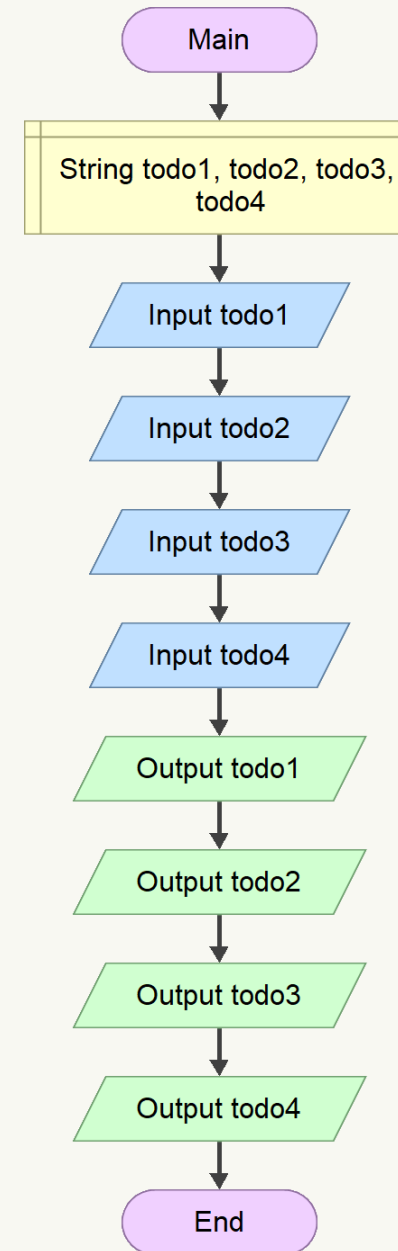
*How many variables do we need?
Is 5 enough? 10?*

The items are **textual** and written concisely.



Problem

- How to address the **arbitrariness** number of data?
- Can ordinary variables answer the challenge?





Problem

*Ordinary variable **cannot** be the solution due to its **limitation** to only handle one value at a time.*

*Instead, use **array** in combination with **repetition**.*



Question

What is **array**?

Definition

.....

[]

*Unlike an ordinary variable, an **array** is capable to hold **multiple values** at once.*

The size of an array (n) reflects the number of its elements. Each element is addressable through an index, $0 - n-1$.

Array

- Similar to a variable, an array must be uniquely identified.
 - An array should be labeled in **plural** form.
 - E.g. names, grades, statuses, etc.
- Generally, an array holds a **fixed** number of **homogenous** values.
 - Some languages support heterogeneous type and size alteration.
- **Multidimensional** array is supported in most languages.

[]

If 10 is the size (n) of an array, then:

- it may hold up to 10 distinct elements,
- each is addressable through index 0 – 9.

The **size** of the array, the number of elements it has. Each element holds a value.

identifier[n]

The **square** brackets indicate the use of array, not ordinary variable.

Array identifier is in **plural** form of noun.

An example of a to-do list.

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```
int n = 4;  
String[] todos = new String[n];
```

Declaring an array of String with size = 4.

It has 4 elements:

- + the 1st element is at index 0, todos[0].
- + the last element is at index 3, todos[3].

```
int n = 4;  
String[] todos = new String[n];  
  
todos[0] = "Meeting with ...";  
todos[1] = "Do Math exercise, ...";  
...  
todos[3] = "Designing the ...";
```

Declare Properties

Declare

A Declare Statement is used to create variables and arrays. These are used to store data while the program runs.

Variable Names:

todos

Type:

☒ String

☐ Integer

☐ Real

☐ Boolean

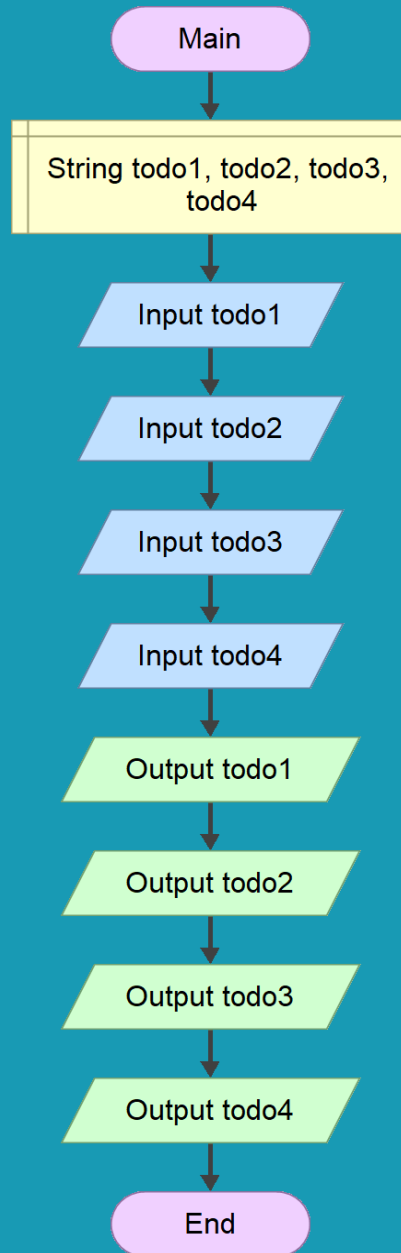
☒ Array?

Array Size:

n

OK

Cancel

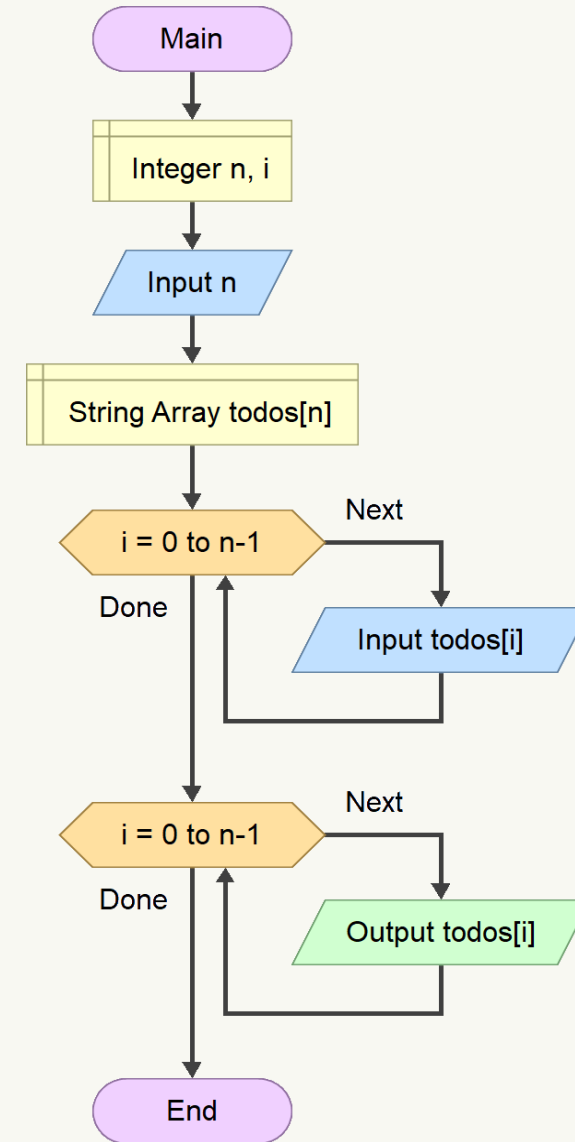


Ordinary **Variable**.

- Inflexible.

Using **Array**.

- Flexible.



Can array be the answer to this challenge?

Distinction between the **"done"** and "undone" items.

Today's To Do List:

1. Meeting with supervisor. [done]
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Final Thoughts.



Conclusion

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1. An array is capable to store multiple values at once.
 - An n -size array has elements with index $0 - n-1$.
 - Homogenous type.
2. To match the array size arbitrariness, it is very common to also use repetition along with it.
 - The array—repetition combos.

References

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Wassberg, J. (2020). Computer Programming for Absolute Beginners. Packt.

Declare – Flowgorithm

<http://www.flowgorithm.org/documentation/declare.html>



– EOF –



Course Lecturer

Mario E. S. Simaremare
Institut Teknologi Del



@simaremare



@dasar-pemrograman



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