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The Art of R Programming

Alireza Doustmohammadi

M.Sc. student in Bioinformatics, Tarbiat Modares University

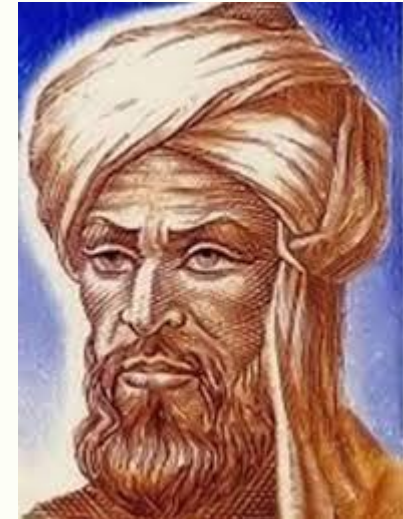
Why R?

- offers a wide variety of statistics-related libraries
- Robust Visualization Library
- you can develop Web-Apps
- has robust and vibrant online community

Solving a problem using computer

What is algorithm?

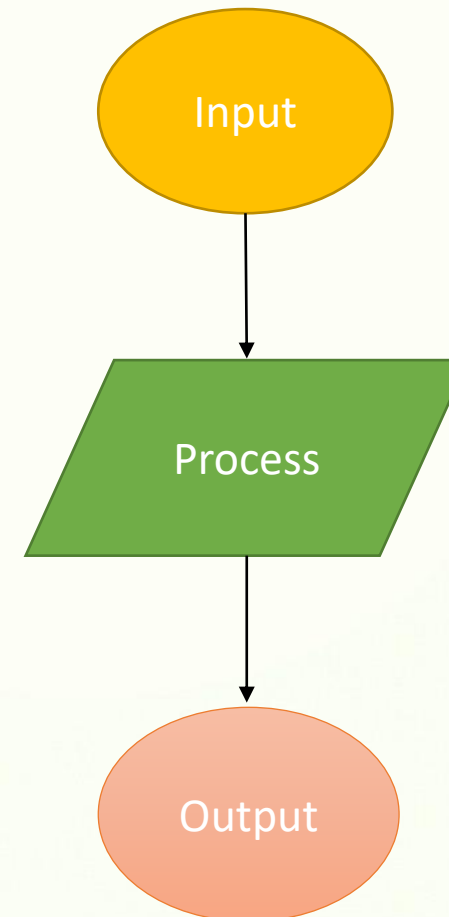
- A set of instructions that:
 - Is in order
 - Exhaustible
 - It has at least one input



Solving a problem using computer

What is algorithm?

- A set of instructions that:
 - Is in order
 - Exhaustible
 - It has at least one input



Solving a problem using computer

The question confuses me.

- Give different examples
- Divide and Conquer

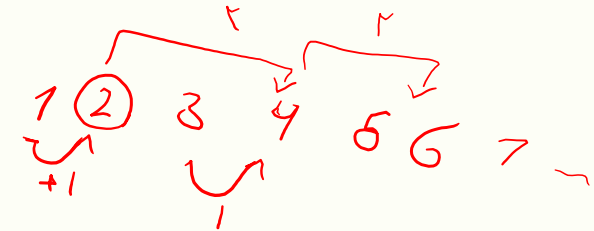


Solving a problem using computer



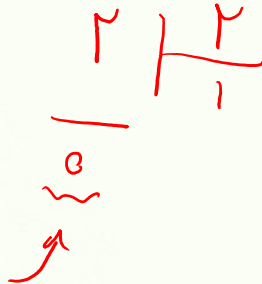
Solving a problem using computer

Example: The number of even numbers from 1 to 20

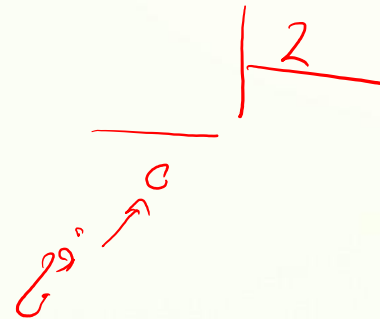


2, 4, 6, 8, 10, ...

↳ step by step



$count \leftarrow 1$



Solving a problem using computer



Solving a problem using computer

الله ربيم = راهم

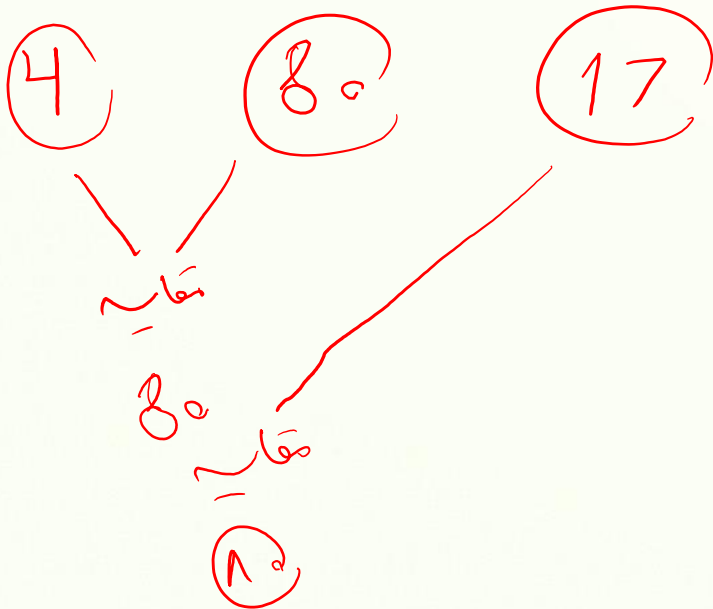
Example: Write an algorithm to calculate and print the average of three arbitrary numbers.

$$\begin{array}{r} 2 + 4 + 18 \\ \hline 3 \end{array}$$

میانگین

Solving a problem using computer

Example: Write an algorithm that takes three arbitrary numbers and determines and prints the largest value among them.



Solving a problem using computer

Example: Calculate Human organism GC content.

' A A A T A T C G G G '



step 1 → A

step 2 → T

C

G

Solving a problem using computer

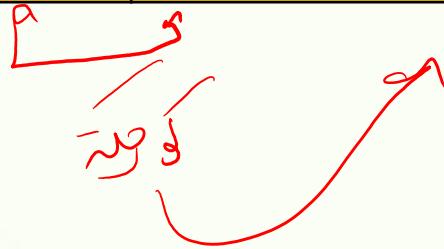
Example: Sort numbers

➤ Give an Example

10	30	17	12	1
----	----	----	----	---

1st step:

10	30	17	12	1
----	----	----	----	---



Min number: 10

1st step:

10	30	17	12	1
----	----	----	----	---

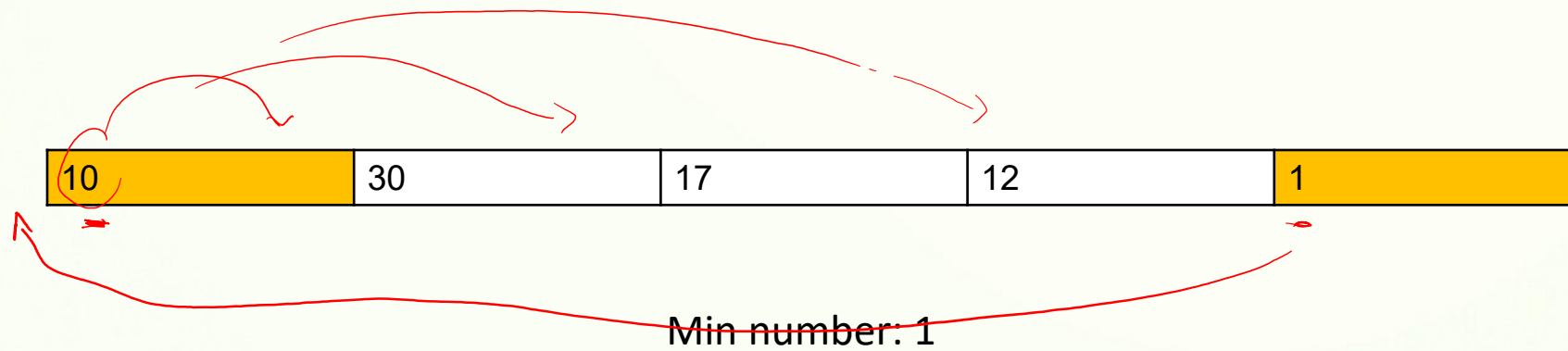
Min number: 10

1st step:

10	30	17	12	1
----	----	----	----	---

Min number: 10

1st step:



1st step:

1	30	17	12	10
---	----	----	----	----

2nd step:

1	30	17	12	10
---	----	----	----	----

Min number: 17

2nd step:

1	17	30	12	10
---	----	----	----	----

2nd step:

1	17	30	12	10
---	----	----	----	----

Min number: 12

2nd step:

1	12	30	17	10
---	----	----	----	----

2nd step:

1	12	30	17	10
---	----	----	----	----

Min number: 10

2nd step:

1	10	30	17	12
---	----	----	----	----

3rd step:

1	10	30	17	12
---	----	----	----	----

Min number: 17

3rd step:

1	10	17	30	12
---	----	----	----	----

Min number: 12

3rd step:

1	10	12	30	17
---	----	----	----	----

4th step:

1	10	12	30	17
---	----	----	----	----

Min number: 17

4th step:

1	10	12	17	30
---	----	----	----	----

با تشکر از حسن توجه شما

