

ALGORITHM-DESIGN-TECHNIQUE: Bruteforce

STUDENT REGISTRATION ID (NRP): _____

NAME: _____

CLASS: _____

```
String[] components = {"+", "-", "*", "4", "5", "8", "3"};
```

ACTIVITY

Suppose you have an array of string containing "+", "-", "*", "4", "5", "8", "3"

- * How many ways to arrange the array into a single string?
- * How many ways to arrange the array into a single string that represent a valid mathematics formula
- * How many ways to arrange the array into a single string that represent a valid mathematics formula so that the result is "15"
- * Write a piece of program/pseudo code to show all possible combination

ALGORITHM-DESIGN-TECHNIQUE: Greedy

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ACTIVITY

1. Install this app in your phone: <https://play.google.com/store/apps/details?id=com.saggroup.algorithmpro&rdid=com.saggroup.algorithmpro> (You can use `Algorithm Pro` as keyword)

2. Read the `knapsack problem` section

3. Suppose you are participating in a reality show. The rule is quite simple. A knapsack is given to every participant, and each participant should put items as possible into the knapsack. Each item has their own weight and value. However, the knapsack capacity is just 0.5 Kg. Given the items as follow, which ones will you put into the knapsack?

Item	Weight	Value
A	100 g	Rp. 200.000,-
B	11 g	Rp. 25.000,-
C	50 g	Rp. 50.000,-
D	40 g	Rp. 30.000,-
E	100 g	Rp. 190.000,-
F	300 g	Rp. 200.000,-
G	200 g	Rp. 150.000,-
H	50 g	Rp. 20.000,-
I	80 g	Rp. 60.000,-
J	90 g	Rp. 40.000,-

4. Write a program/pseudocode to choose the best combination

ALGORITHM-DESIGN-TECHNIQUE: Divide & Conquer

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ACTIVITY

5 (next pivot)	3	2	4	7	1	10	6	8	9
3 (next pivot)	2	4	1	5 (pivot)	7 (next pivot)	10	6	8	9
2 (next pivot)	1	3 (pivot)	4 (next pivot)	5					
1 (next pivot)	2 (pivot)	3	4 (pivot)	5					
1 (pivot)	2	3	4	5					
1	2	3	4	5					

- * Complete the table above
- * How many steps are required to sort the numbers (compare it with bubble force)?
- * How is the sorting algorithm related to `divide and conquer` principle?
- * Write a program/pseudocode to do the sorting algorithm