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Progress Report Week 1

Algorithm Design Manual 2nd Ed

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Beberapa summary

Three desirable properties of good algorithm : Correct, Efficient, and Easy to implement. But having just to give good answer without slowing down is sometimes acceptable

To distinguish correct from incorrect algorithm we need **proof**

Mathematical proof : 1. Precise statement what to proof.

2. Assumption what is true.

3. Chain of reasoning from assumption to proof.

To expressing algorithm we can use : English, Pseudocode, Programming Language.

Clarity is the goal for expressing algorithm

Problems and properties : often have 2 parts, Input and Output.

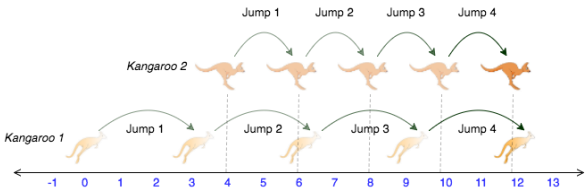
Modeling the problem : can be expressed as combinatorial object : Permutation, Subsets, Trees, Graphs, Points, Polygons, Strings.

And this combinatorial model can be expressed with recursive object method.

To analysis algorithm efficiency, we can use Ram model of computation or Asympthotic analysis of worst-case complex.

Penyelesaian dalam suatu kasus di www.hackerrank.com

https://www.hackerrank.com/challenges/kangaroo/problem



Input : Set of location X and speed v of 2 kangaroos (constraint x1<x2)

Output : Whether both kangaroos can be meet at the same location

Algorithm of the function

By recursive method

```
kangaroo(x1,v1,x2,v2)
      If v1<v2 return NO
      If x1=x2 return YES else
            If x1 < x2 return kangaroo(x1+v1, v1 , x2+v2 ,v2) else
                  Return NO
```

By looking the difference of v

```
kangaroo(x1, v1, x2, v2)
      If v1<v2 return NO
      Dv = v1-v2 and Dx = x2-x1
      If Dx mod Dv = 0 return YES else return NO
```