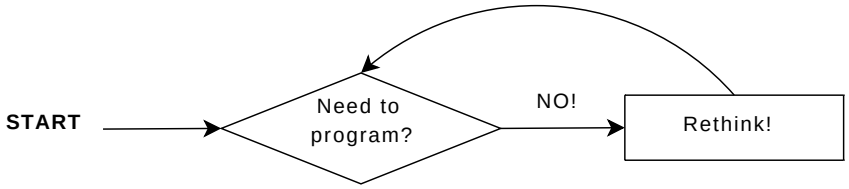
The Program . . .



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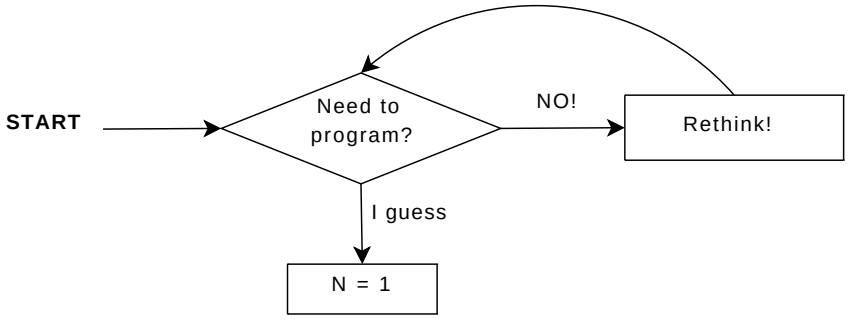

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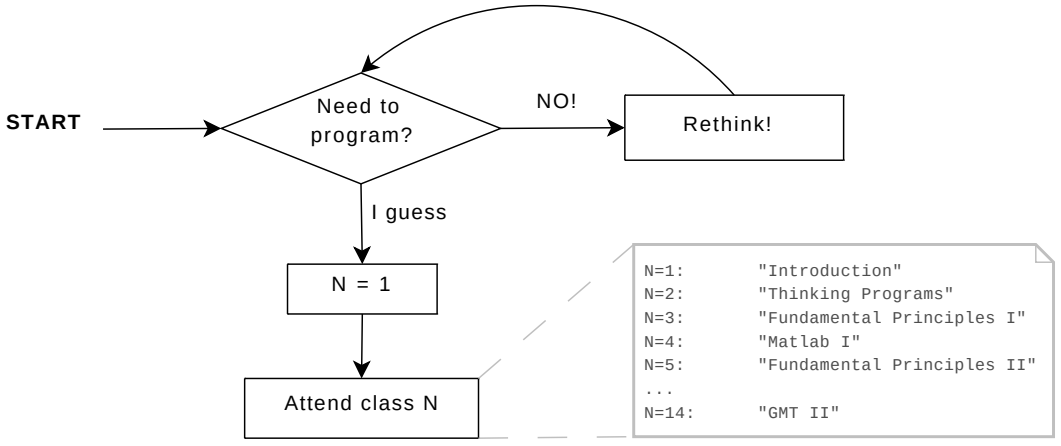
START
Need to program?
NO!
Rethink!
I guess
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Attend class N
N=1: "Introduction"
N=2: "Thinking Programs"
N=3: "Fundamental Principles I"
N=4: "Matlab I"
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...
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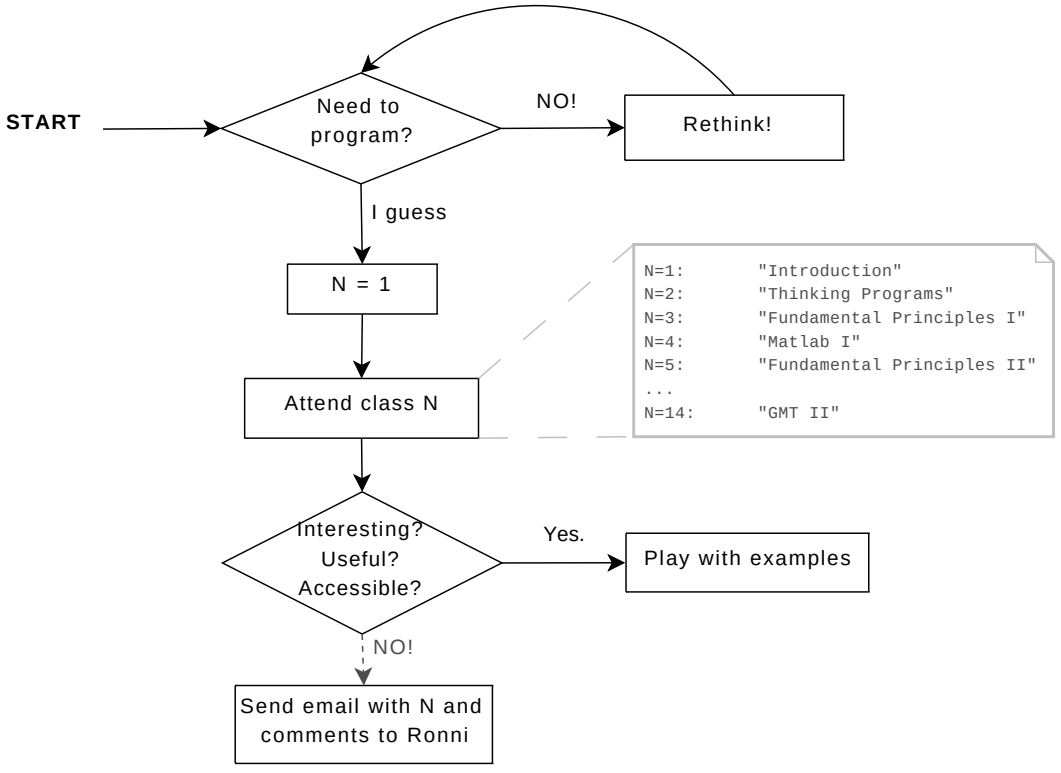
The Program . . .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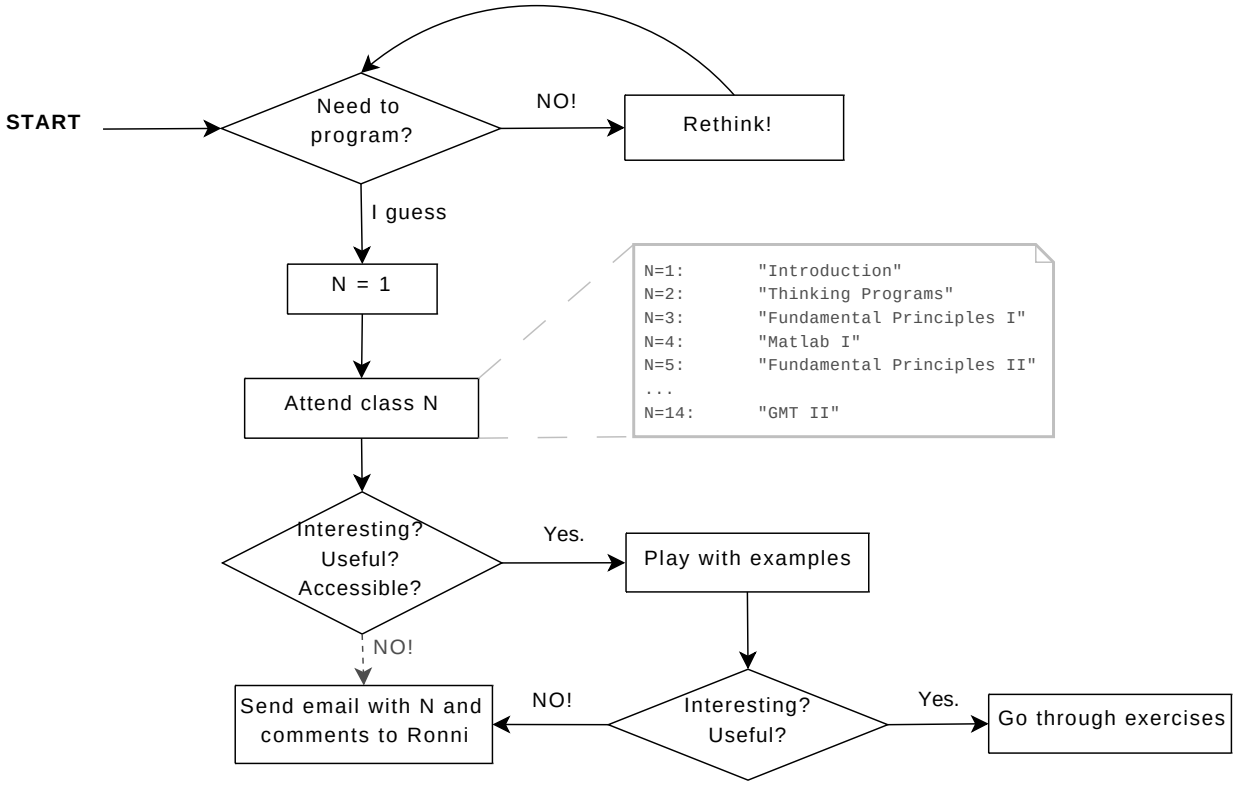
Interesting?
Useful?
Accessible?
Yes.
Play with examples
NO!
Send email with N and comments to Ronni

The Program . . .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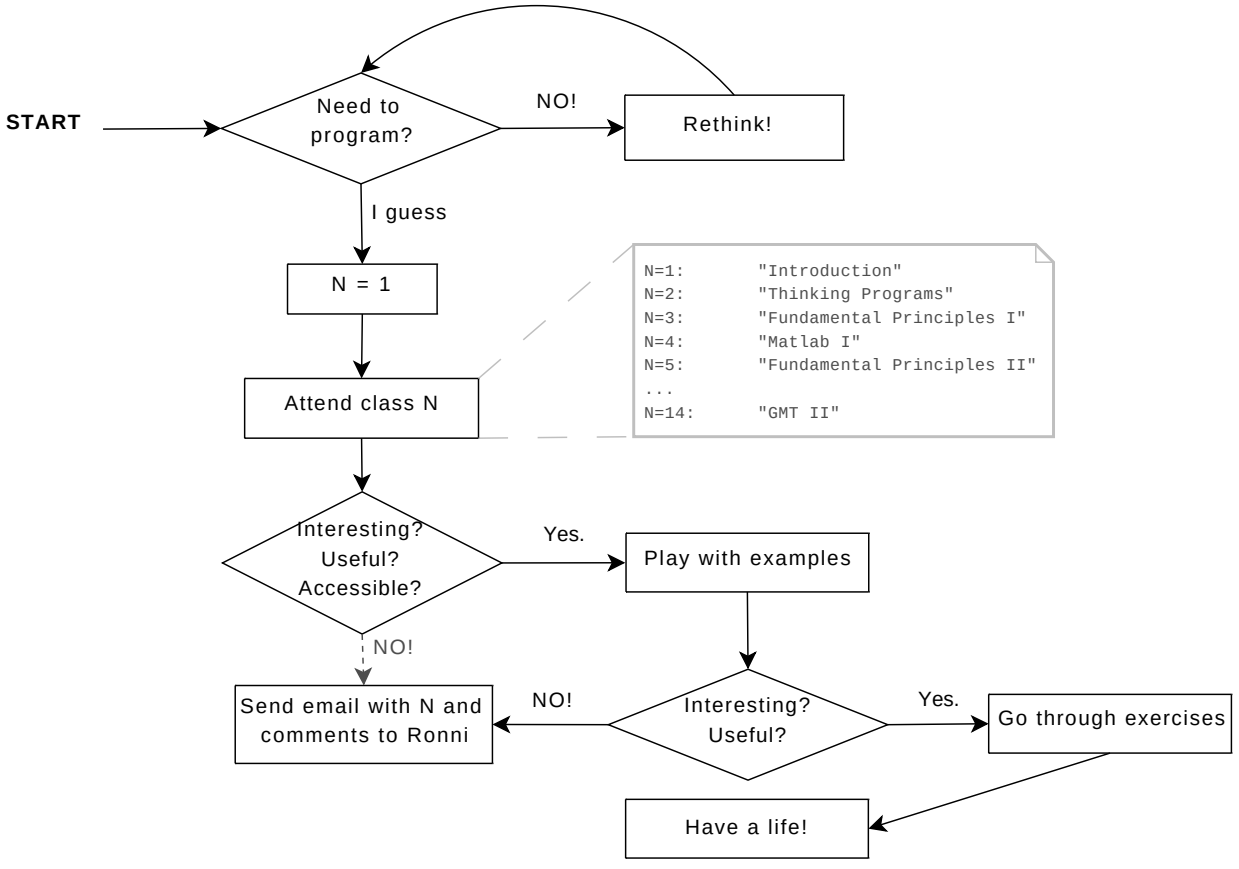
Interesting? Useful?
Yes.
Go through exercises

The Program . . .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Yes.
Play with examples
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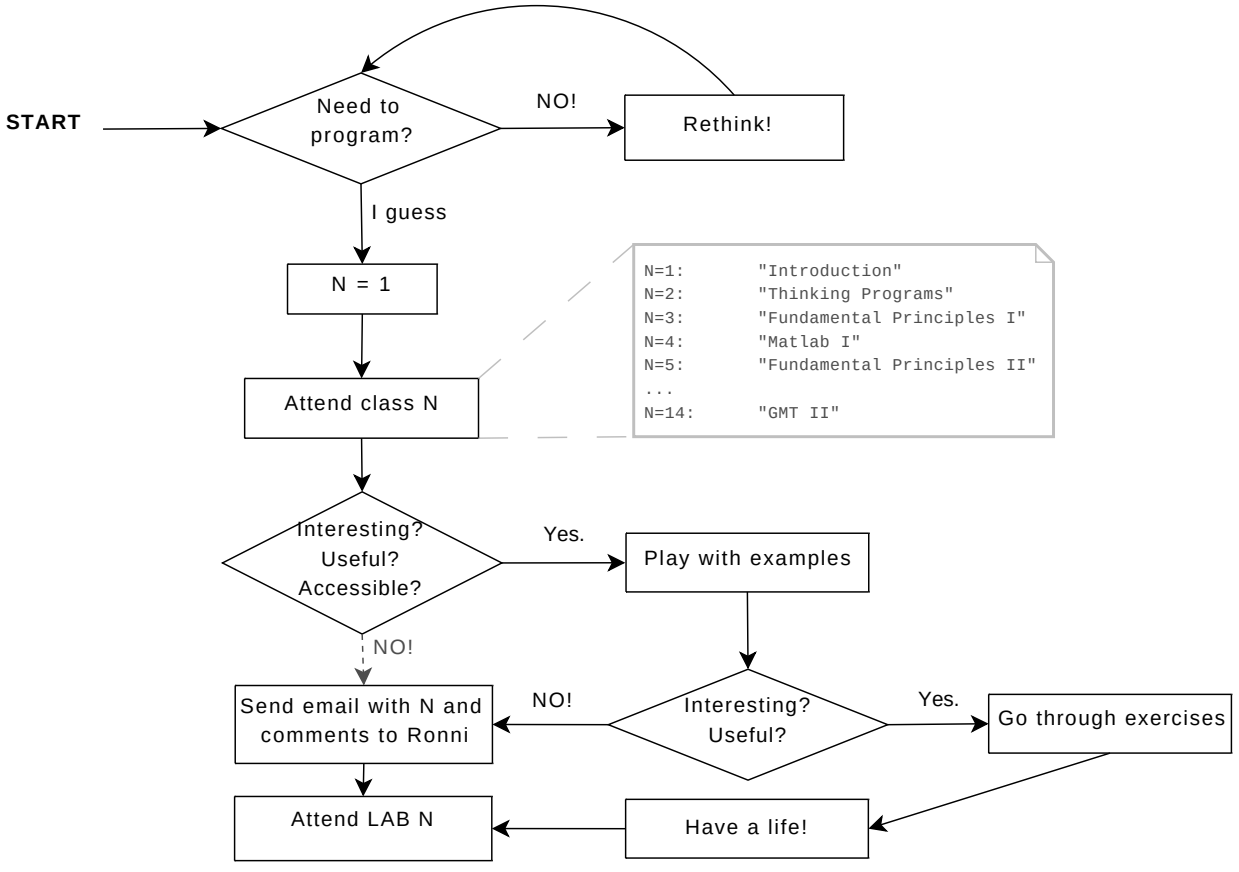
Send email with N and comments to Ronni
NO!
Interesting? Useful?
Yes.
Go through exercises
Have a life!

The Program . . .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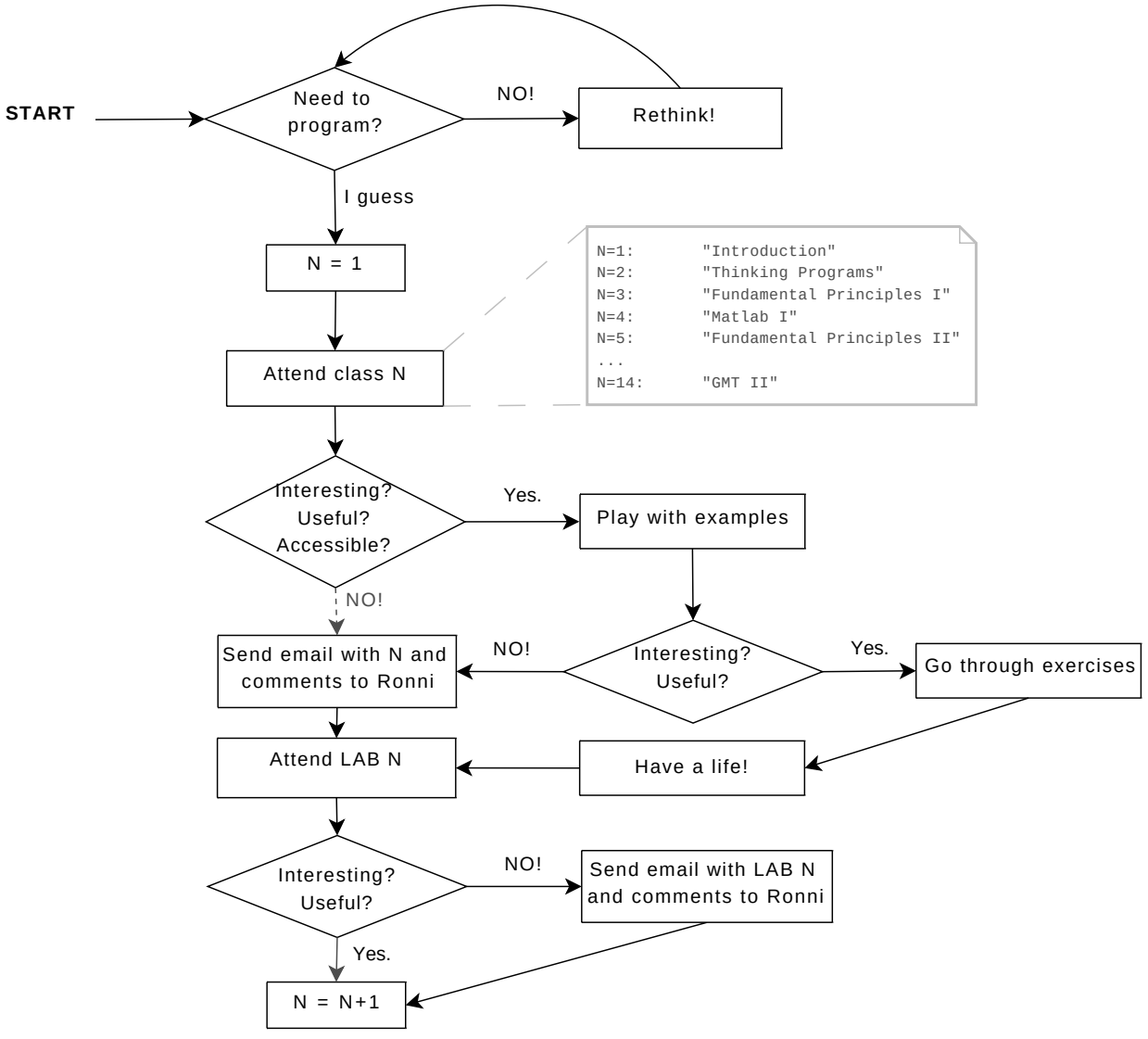
Yes.
Go through exercises
Attend LAB N
Have a life!

The Program . . .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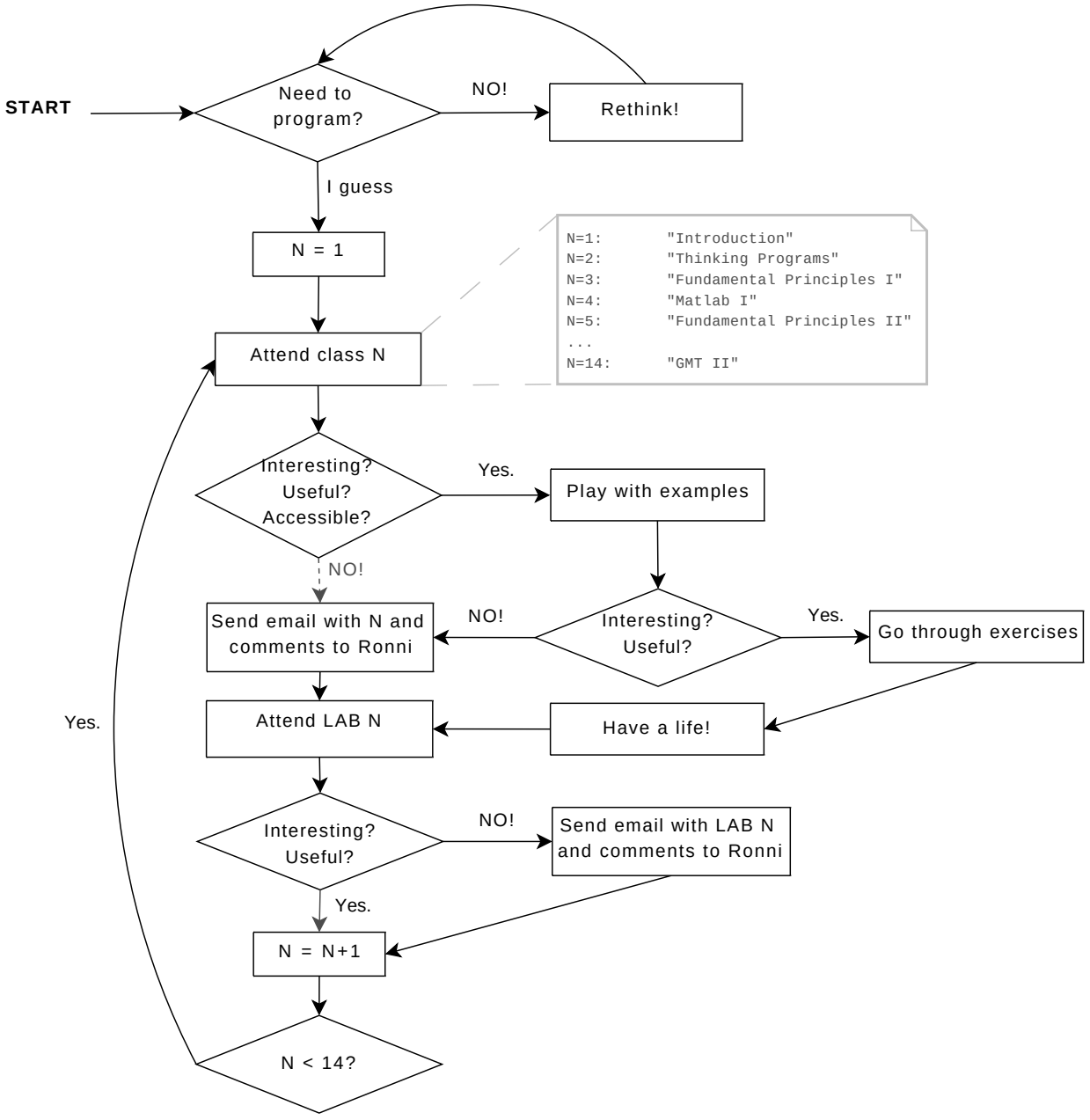
Yes.
Go through exercises
Attend LAB N
Have a life!
Interesting? Useful?
NO!
Send email with LAB N and comments to Ronni
Yes.
N = N+1

The Program . . .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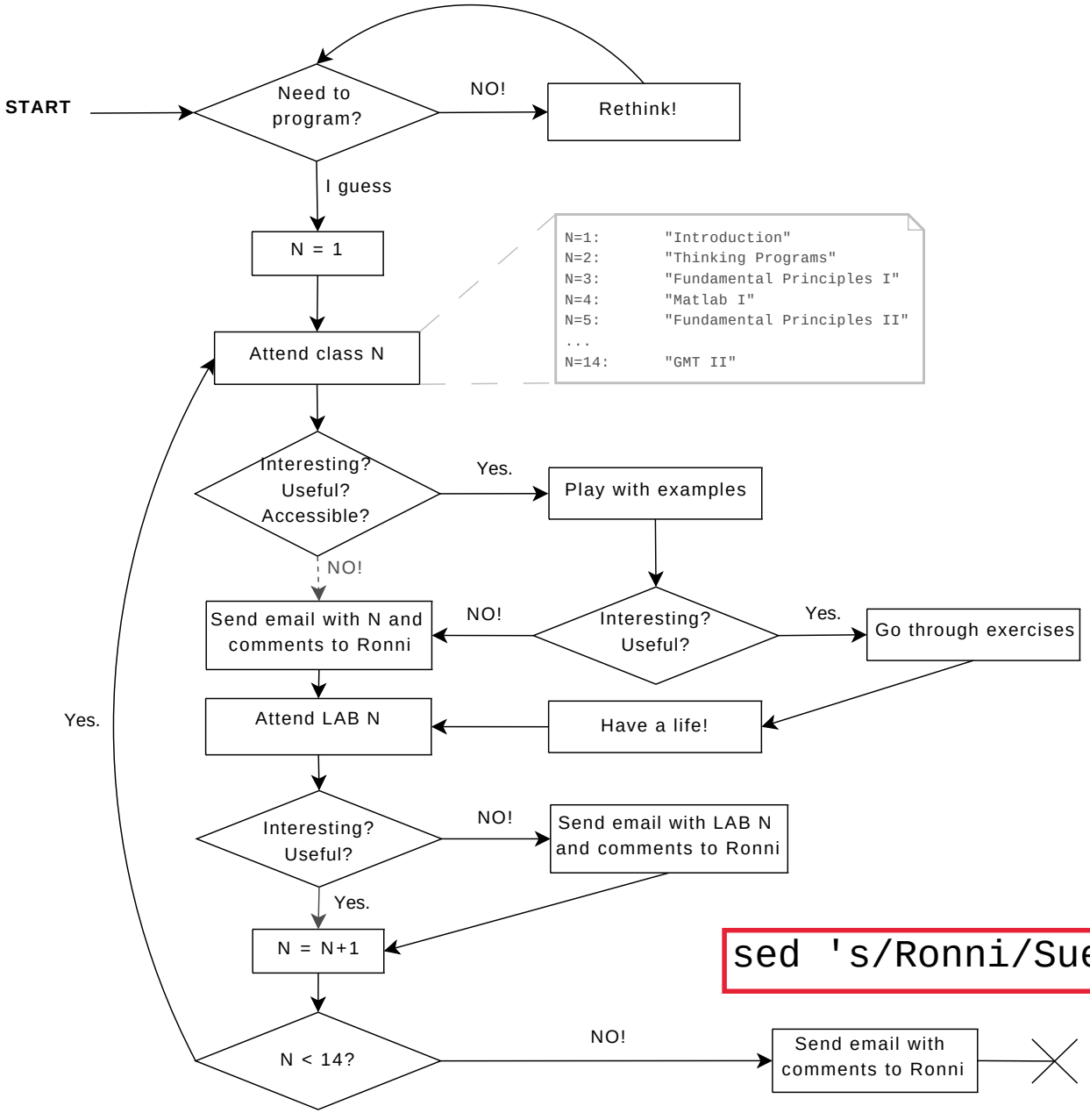
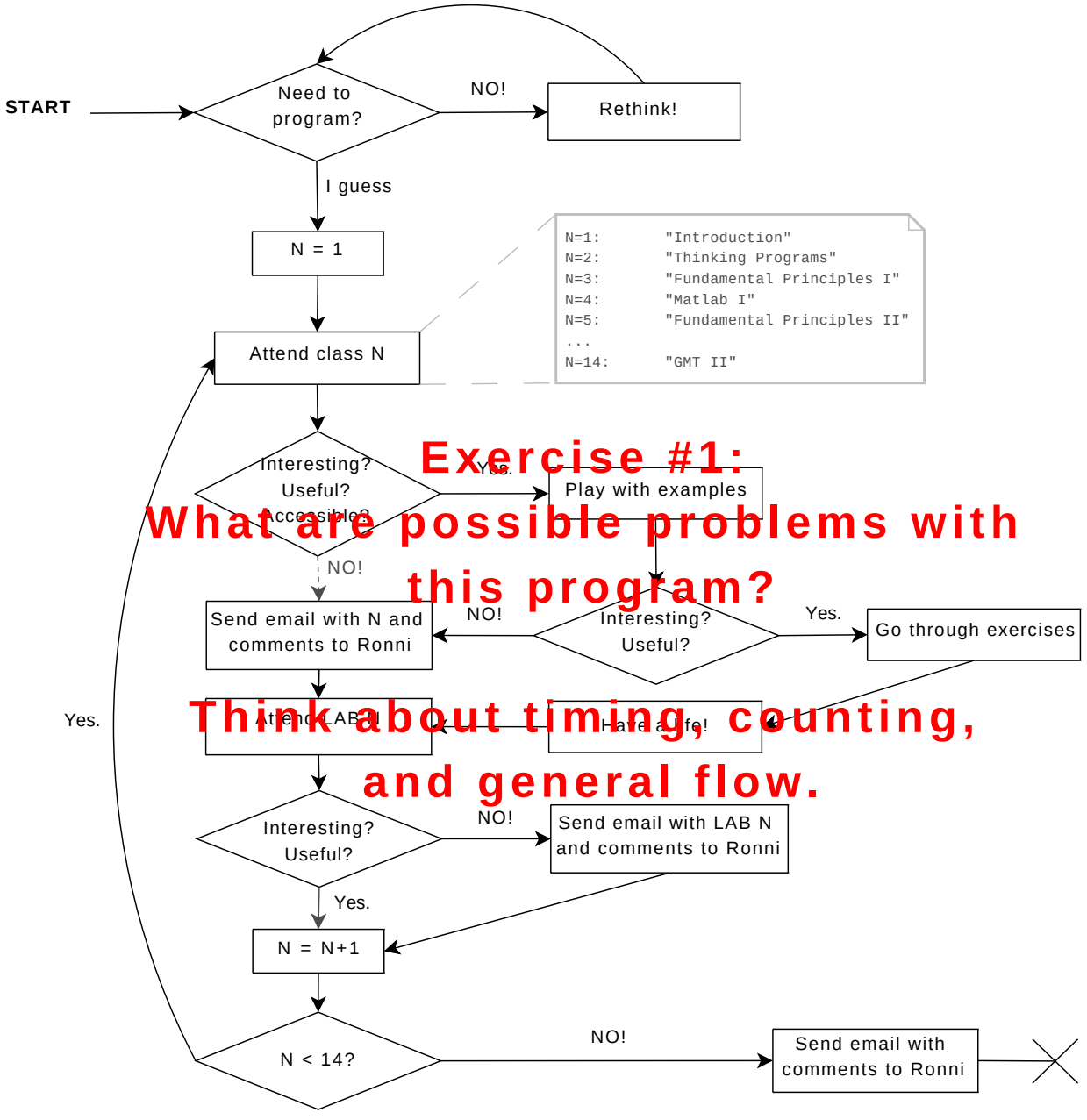
NO!
Interesting? Useful?
Yes.
Go through exercises
Attend LAB N
Have a life!
Yes.
Interesting? Useful?
NO!
Send email with LAB N and comments to Ronni
Yes.
N = N+1
N < 14?

The Program . . .




```
sed 's/Ronni/Sue,Zach,Ronni/g'
```

The Program . . .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Yes.
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Yes.
Attend LAB!
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Interesting? Useful?
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N = N+1
N < 14?
NO!
Send email with comments to Ronni
Exercise #1:
What are possible problems with this program?
Think about timing, counting, and general flow.

More Philosophy . . .

Jon Claerbout (a geophysicist), as quoted in “WaveLab and Reproducible Research”:

An article about computational science in a scientific publication is **not** *the scholarship itself, it is merely* **advertising** *of the scholarship. The actual scholarship is the complete software development environment and the complete set of instructions which generated the figures.*

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Implications . . .

- publications should include data and code (example: Okada)
- figures should be reproducible by readers
- write code that others can use!

What does that mean?

Good

```
function fp = screw2d(x, xf, d, sdot)
% function fp = screw2d(x, xf, d, sdot)
%
% Computes fault-parallel slip rate for 2D screw dislocation
% with fault located at xf, with locking depth d and slip rate sdot.
% Will compute at one or many locations x.
%
% x     column vector
% xf    scalar
% d     scalar
% sdot  scalar
%
if ( d == 0 )
    fp = sdot*0.5*sign(x-xf*ones(size(x)));
else
    fp = sdot*atan2((x-xf*ones(size(x))),d)/pi;
end
```

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```
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if ( d == 0 )
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```

Bad

```
function fp = screw2d(x, xf, d, sdot)
if(d==0)fp=sdot*0.5*sign(x-xf*ones(size(x)));else fp=sdot*atan2((x-xf*ones(size(x))),d)/pi;
end
```

Example 1:

Getting into grad school ... and out.

Thinking programs – Breaking down complex tasks

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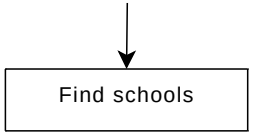
Getting into grad school ... and out.

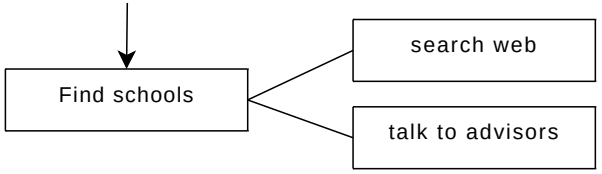
things to do:

apply, figure out where to go, visa stuff, class work, research, thesis ...

Thinking programs – Breaking down complex tasks



Thinking programs – Breaking down complex tasks



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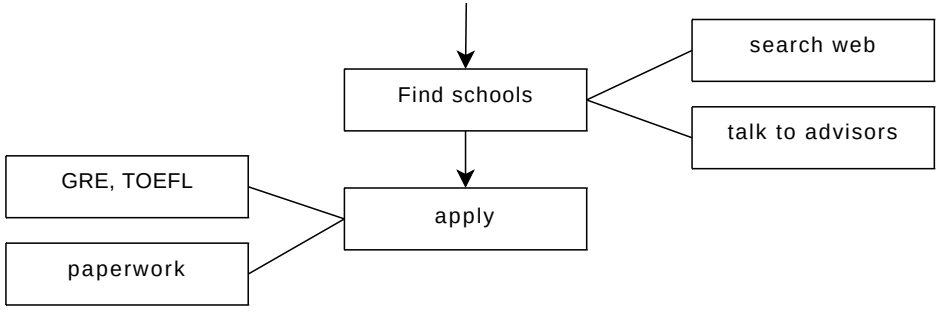

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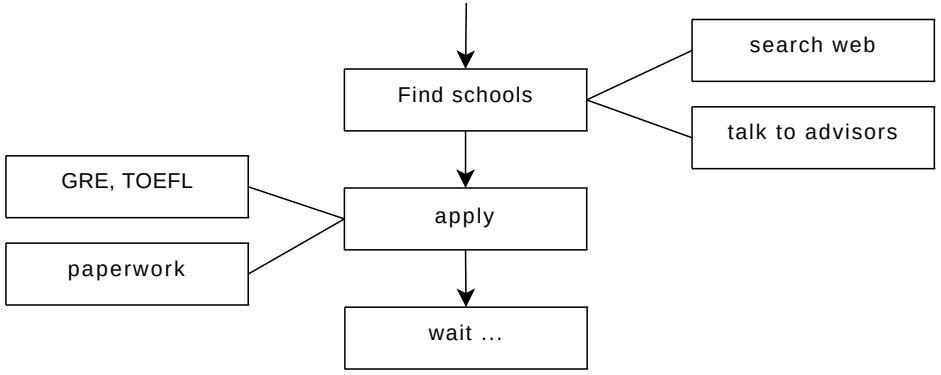

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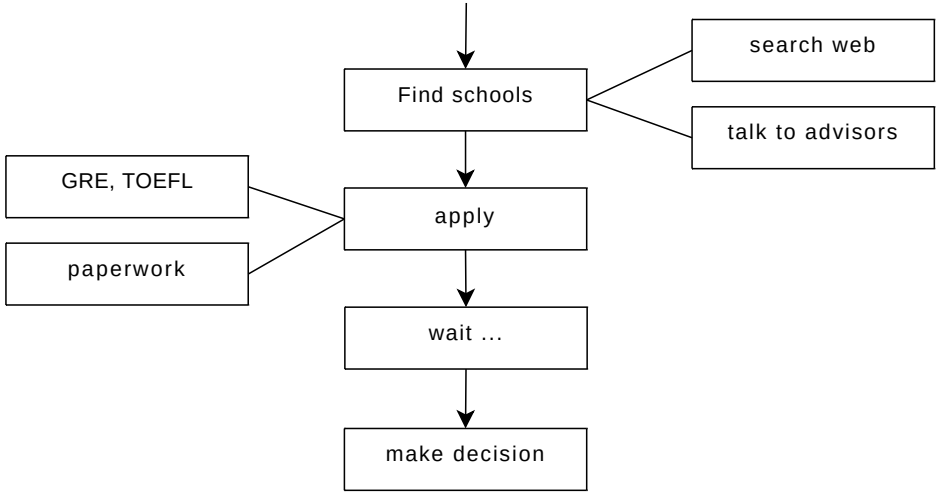

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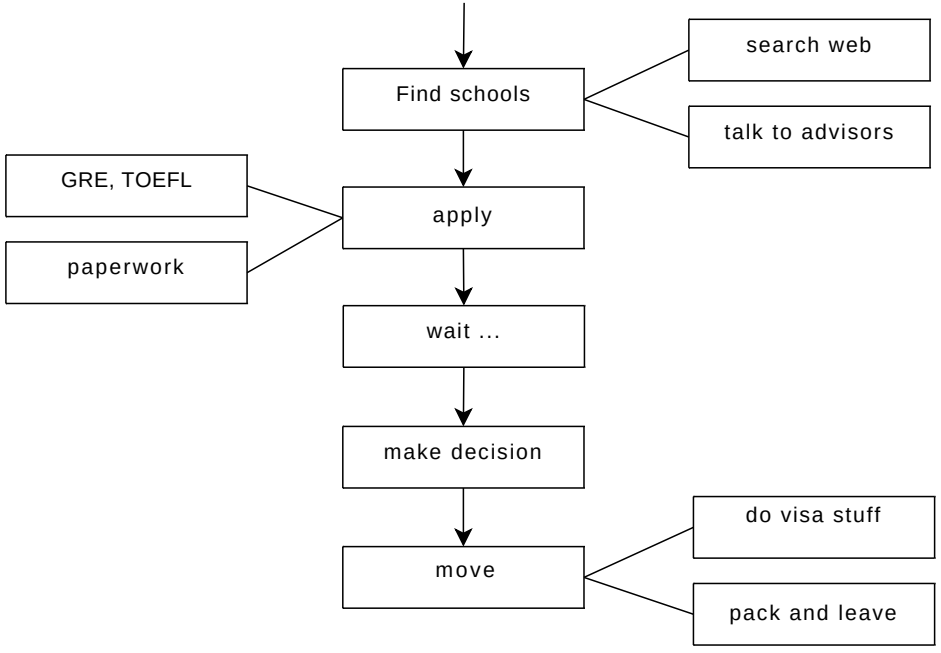

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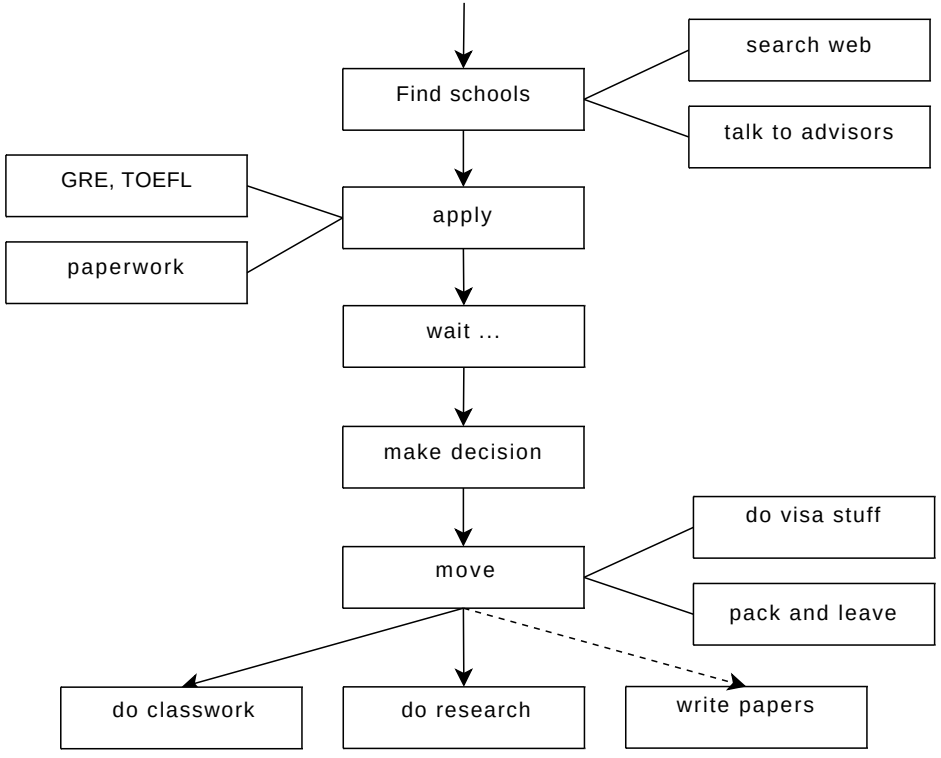

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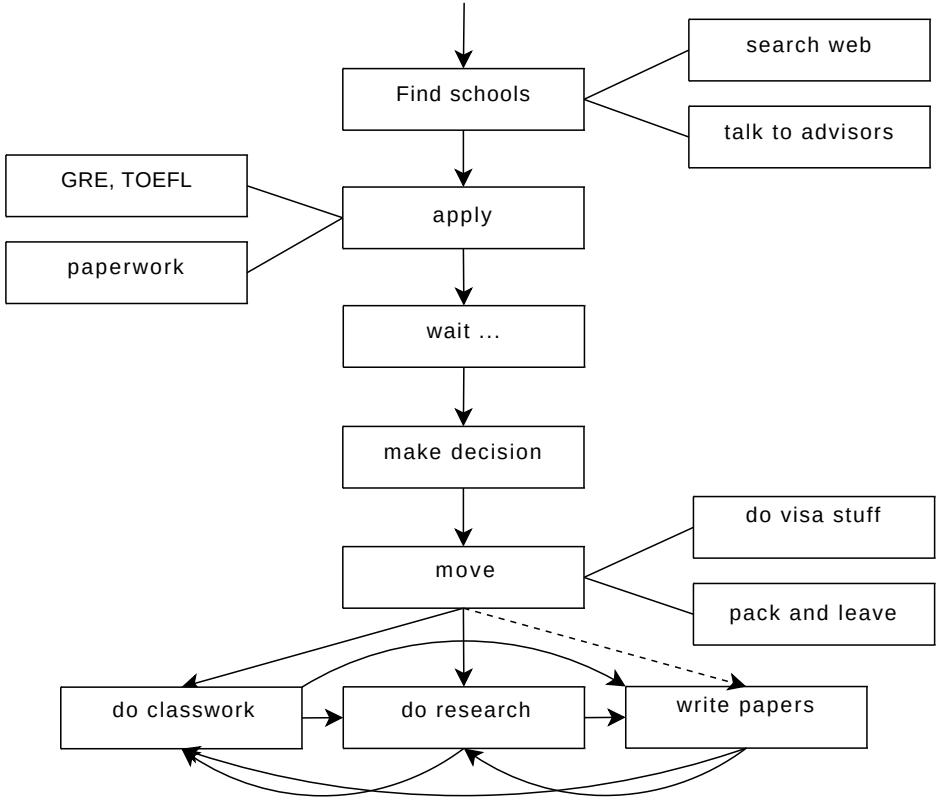

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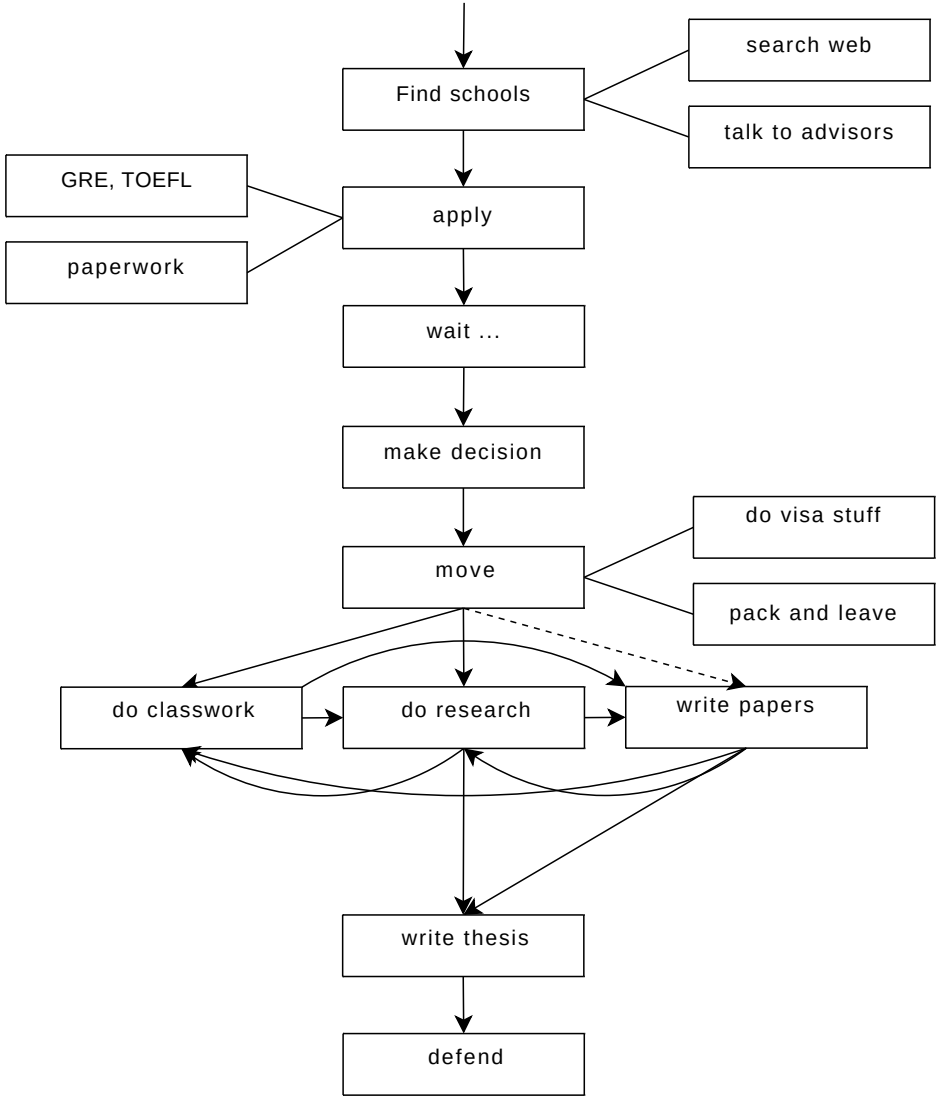

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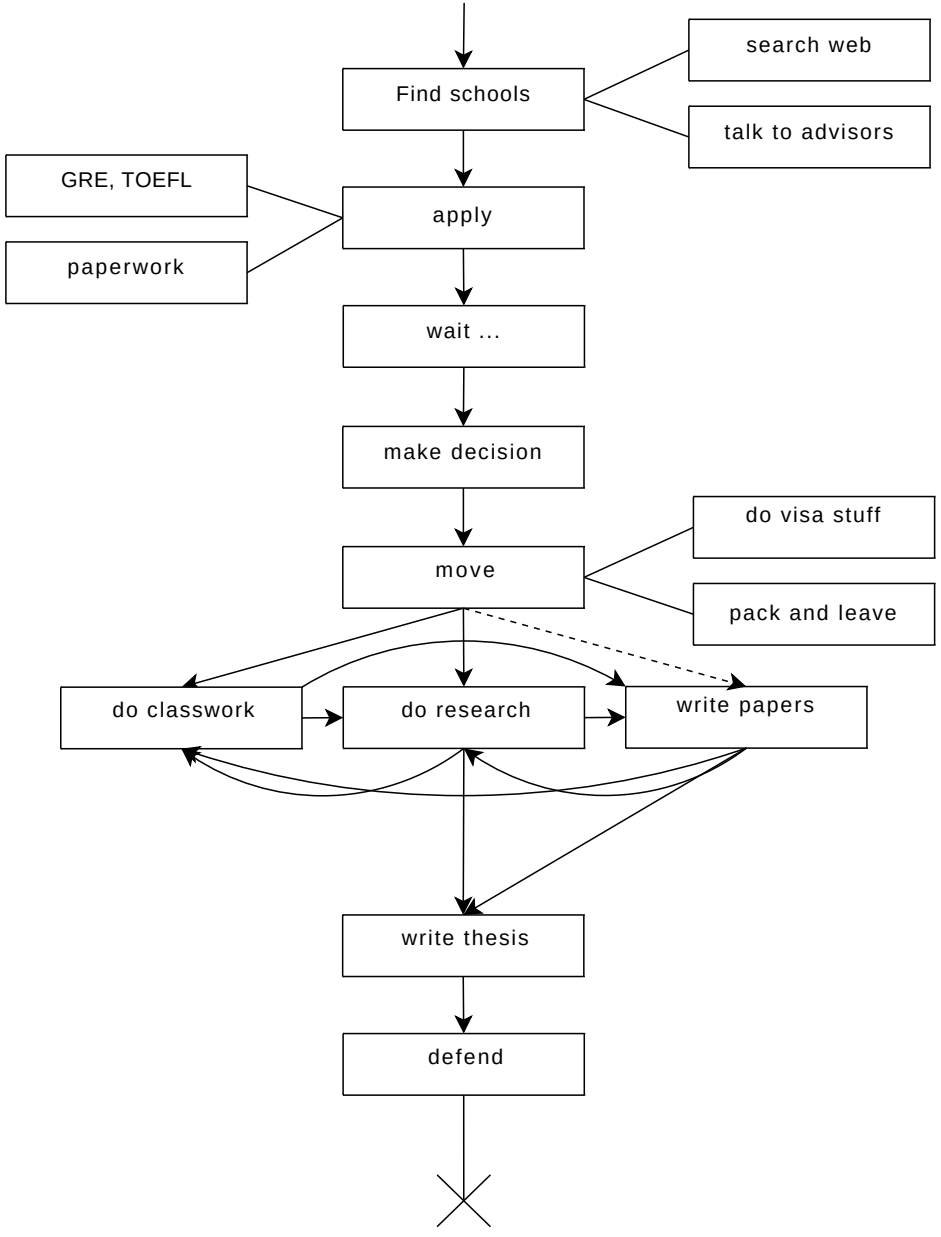

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