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Dependency Injector

3. Injector Trees - Injectors arranged in two trees

Injector trees

- Angular arrange the injectors in 2 trees
  - Element injector tree
  - Module injector tree

Element injector tree

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- Made out from ElementInjector
- Every time you supply value in **providers** array in a **Component/Directive** metadata you add a child to the tree
- Every DOM element can have an Injector.
- When asking for data from the **DI** inside a **Component/Directive** angular will traverse the tree starting from the closes **ElementInjector** and moving up till it finds the data

Module injector tree

- Made out from **ModuleInjectors**
- This tree is made from the root injector
- Every time we load a lazy loaded module, we add a child to the tree
- Every injector here is loaded with:
  - **providers** - array
  - **imports** - array recursively loading from other modules providers array

DI algorithm - Part 1 - find the tree

- To understand how the DI works we first need to understand what tree will the search start
  - If we are asking in the constructor of a **Component/Directive/Pipe** angular will start from the nearest injector in the **Element Tree**
  - If we are asking the DI in a constructor of a module, angular will search the nearest **Injector** in the **Module Tree**
  - If we are in a service it depends on which of the above requested for the service recursively.

DI algorithm - Part 2 - Traverse the tree

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- After finding the tree and the nearest injector start traversing the tree asking each injector if it can find the data we are looking for

- If we are on the Element tree and the data was not found we start looking in the module tree starting again with the nearest module injector to whomever originated the request

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Exercise

`Injector element tree`

Ex. Injector Element Tree

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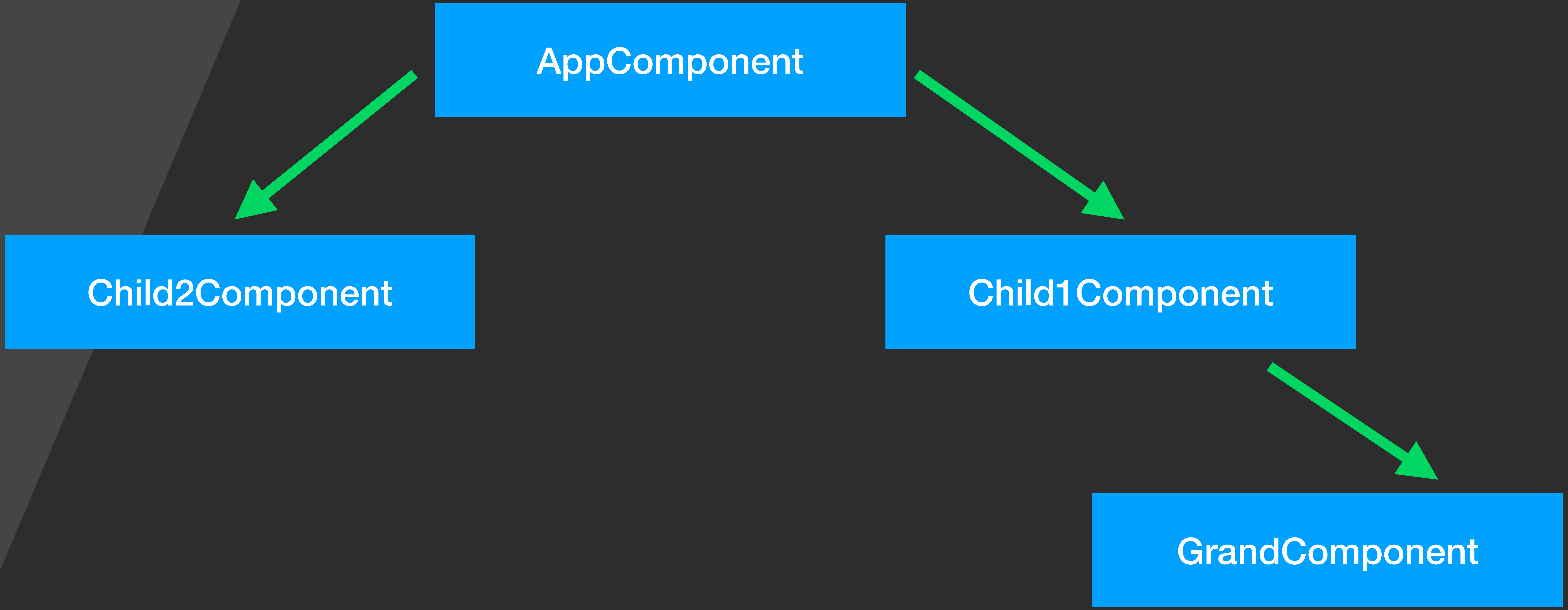
- Create the following component tree, where every component should display a simple message identifying that component from the other components



Ex. Injector Element Tree

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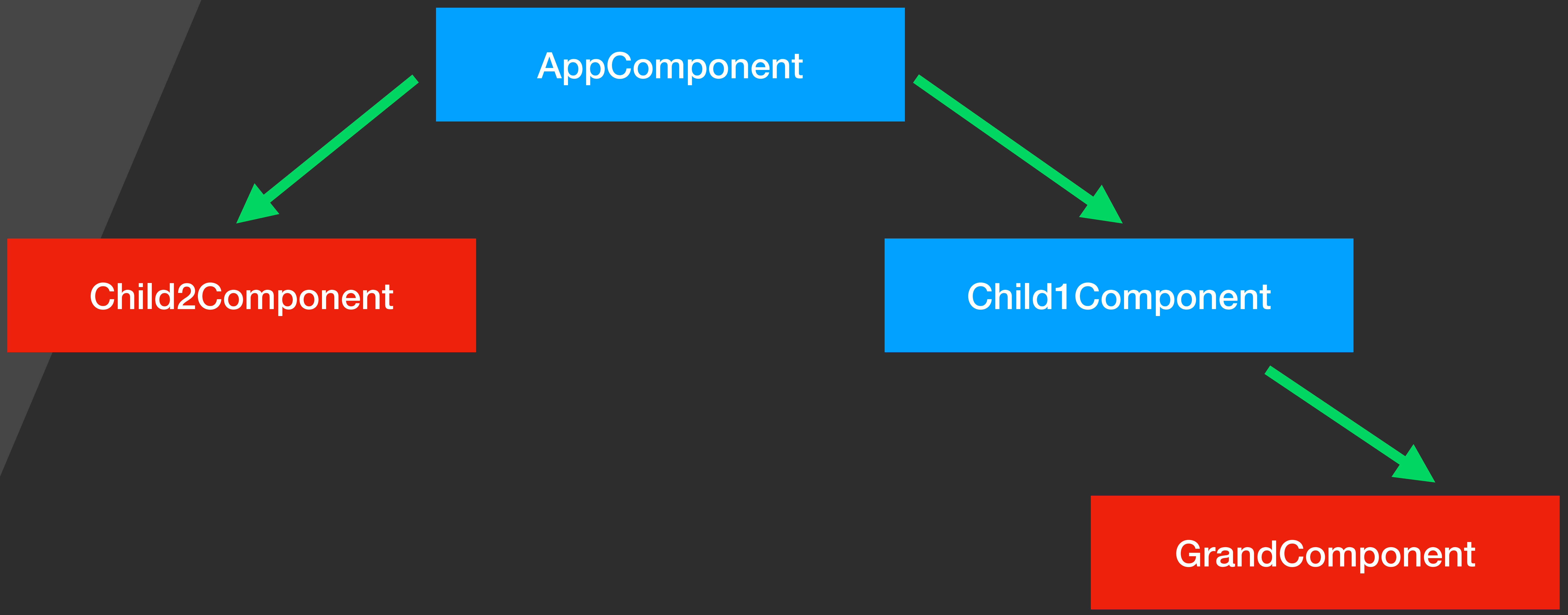
- The blue components should register a message with the Injector
- The “red” components should read the message from the DI
- Based on the algorithm we learned, from where will they get their message?



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Exercise

`Module injector tree`

Ex. Module injector tree

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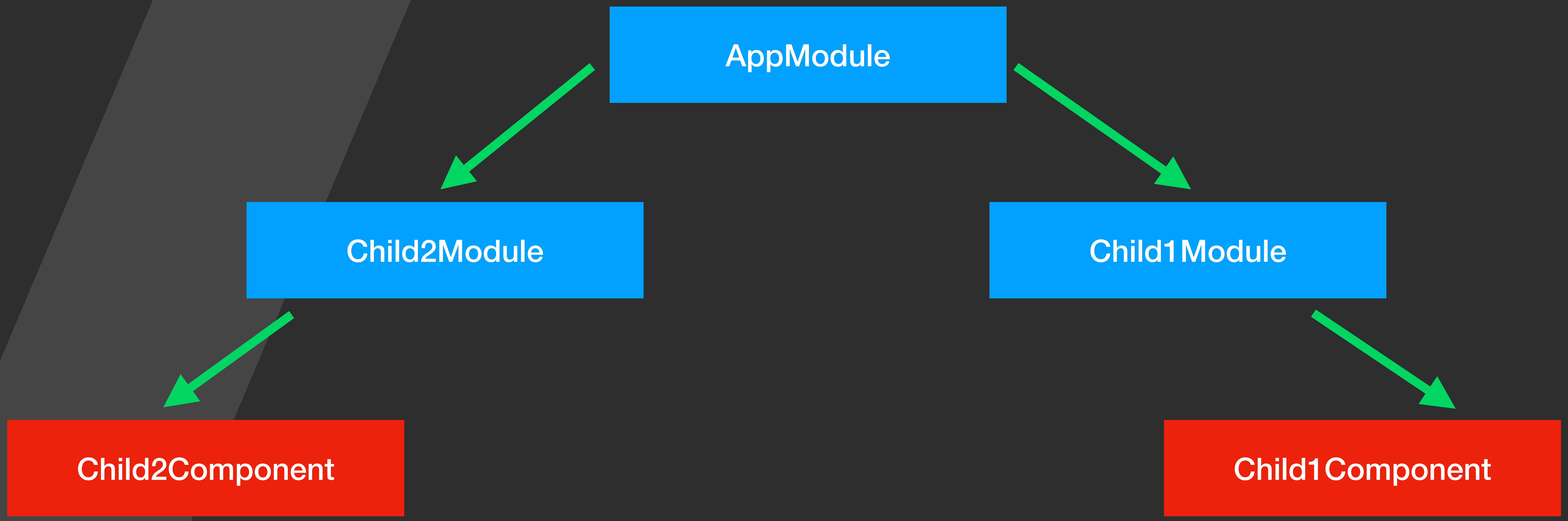
- The blue blocks are lazy loaded modules you need to create
- The red are components in the lazy loaded modules



Ex. Module injector tree

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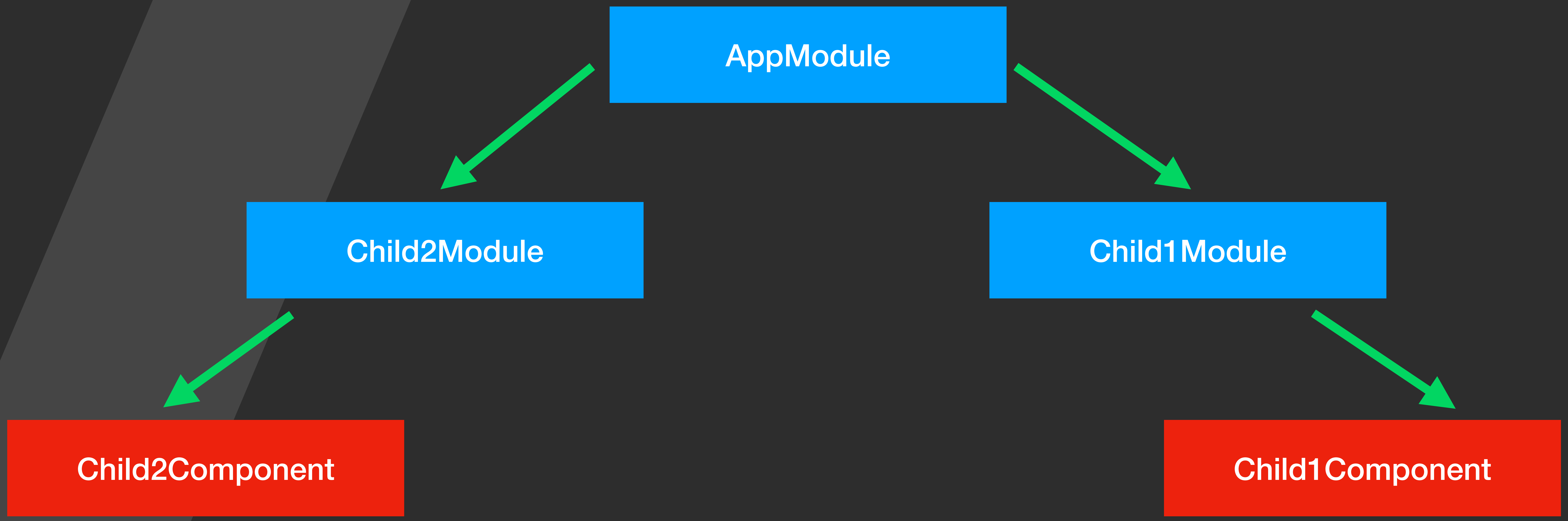
- Provide a message in the **AppModule,** and in the **Child1Module** Injector
- Ask for that service in the components you created: **Child1Component, Child2Component**



Summary

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- Angular is making 2 Trees of injectors: Element and Module
- Angular will traverse the trees looking from the closes injector and looking up the tree
- After finishing with the element tree angular will keep searching in the module tree
- We can fine tune the search algorithm with additional decorators.

Thank You

Next Lesson: 3. DI Decorators