Angular in General

Angular Core -
- Declarative templating – std HTML + Angular markup
- Component model – structure app with natural SoC + reusable architecture
- Change detection – automatic change detection with zone.js
- AoT Compilation – static analysis – improves error msgs + refactoring
- DI - most powerful DI of any framework
- DOM independence – swap renderers – for mobile | desktop etc.

Angular Material –
I18n – internationalization needs
Router
Forms for structured user input
Animations – so apps respond with style
ngUpgrade – angjs to angular migration

Other parts of Angular
- Angular CLI
- Protractor – end to end devt
- Augury
- Language Services – IDE understands Angular syntax
- Docs for new parts of angular

What is Performance
- First time render
- Startup speed
- Update render
- Route transition
- Change detection
- Memory pressure
2 main things
Size – smaller | lazy
Speed – be faster| do less| memory pressure| multi-threaded

AoT Compilation – push a lot of things into the build step
  HTML | CSS| Angular JS – HTML compiler + expression parser
  Offline compile -> inline modules -> tree-shake code -> Minify (uglify.js|closure compiler)

Your app'n – generated CD / View + Renderer

DI Runtime | CD Runtime | View Runtime

Injectors

Platform |NgModule | Component | Element and Router (lazy load extra modules)

Code generation – to speed up
Vms are great at inline caching of property names – memorizes location of variables
Using monomorphic code and inline caching –

But vm only has 4 inline caches – reverts to regular hash-map lookup

Hello world greeter -

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▦ Apps 🧠 Rout 📄 RC5 △ ViewCh

☰ ▶ Search

```
while(r) {                          var last_name;
  var v=r.obj[r.prop];              var v = ctx.name;
  if(v!=r.last) {                   if(v!=last_name){
    r.node.textContent                nameTextNode
      = r.last = v;                     .textContent
  }                                     = last_name
  r = r.next;                           = v;
}                                   }
```

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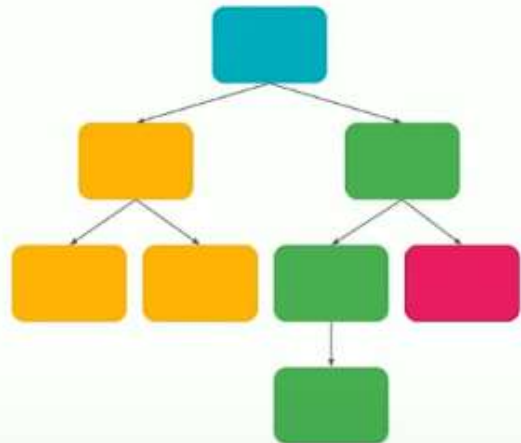
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Takes advantage of reflection capabilities of vm
10 x improvement in speed wrt LHS

TSC can verify through strong typing that the types are correct
Or eagerly gives feedback there is a bug + nicer exception msgs

Wrote their own Parser –
Line numbers etc.

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Apps   Rout   RC5   ViewChi

Search

- Single Pass (/w dev-mode check)
- Top to bottom data flow
- 🟦 CheckAlways
  🟥 Detached
  🟧 OnPush
  🟩 OnDirty
- (Before/After)ChildInit
  (Before/After)ChildChecked
  (Before/After)ContentInit
  (Before/After)ContentChecked

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