**What’s Karma?**

* Karma is a browser test runner.
* Karma is a tool that enables the running of source code (i.e. JavaScript) against real browsers via the CLI (command Line Interface).
* Browsers do not have a concept of loading tests files, running them, and reporting results. What karma does
* It can be used by frameworks like Jasmine, Mocha, QUnit.
* It watches files, so when we save a change, Karma runs tests and reports back instantly, no switching context to Web Browser to run the test.

**What’s Jasmine?**

* Jasmine is a framework for testing JavaScript code.
* Jasmine provides functions to help with structuring your tests and also making assertions.
* [A suite](https://jasmine.github.io/2.1/introduction.html?spec=A%20suite)
  + [contains spec with an expectation](https://jasmine.github.io/2.1/introduction.html?spec=A%20suite%20contains%20spec%20with%20an%20expectation)
* [A suite is just a function](https://jasmine.github.io/2.1/introduction.html?spec=A%20suite%20is%20just%20a%20function)
  + [and so is a spec](https://jasmine.github.io/2.1/introduction.html?spec=A%20suite%20is%20just%20a%20function%20and%20so%20is%20a%20spec)
* [The 'toBe' matcher compares with ===](https://jasmine.github.io/2.1/introduction.html?spec=The%20%27toBe%27%20matcher%20compares%20with%20%3D%3D%3D)
  + [and has a positive case](https://jasmine.github.io/2.1/introduction.html?spec=The%20%27toBe%27%20matcher%20compares%20with%20%3D%3D%3D%20and%20has%20a%20positive%20case)
  + [and can have a negative case](https://jasmine.github.io/2.1/introduction.html?spec=The%20%27toBe%27%20matcher%20compares%20with%20%3D%3D%3D%20and%20can%20have%20a%20negative%20case)
* [Included matchers:](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A)
  + [The 'toBe' matcher compares with ===](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toBe%27%20matcher%20compares%20with%20%3D%3D%3D)
  + [The 'toEqual' matcher](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toEqual%27%20matcher)
    - [works for simple literals and variables](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toEqual%27%20matcher%20works%20for%20simple%20literals%20and%20variables)
    - [should work for objects](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toEqual%27%20matcher%20should%20work%20for%20objects)
  + [The 'toMatch' matcher is for regular expressions](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toMatch%27%20matcher%20is%20for%20regular%20expressions)
  + [The 'toBeDefined' matcher compares against `undefined`](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toBeDefined%27%20matcher%20compares%20against%20%60undefined%60)
  + [The `toBeUndefined` matcher compares against `undefined`](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%60toBeUndefined%60%20matcher%20compares%20against%20%60undefined%60)
  + [The 'toBeNull' matcher compares against null](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toBeNull%27%20matcher%20compares%20against%20null)
  + [The 'toBeTruthy' matcher is for boolean casting testing](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toBeTruthy%27%20matcher%20is%20for%20boolean%20casting%20testing)
  + [The 'toBeFalsy' matcher is for boolean casting testing](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toBeFalsy%27%20matcher%20is%20for%20boolean%20casting%20testing)
  + [The 'toContain' matcher](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toContain%27%20matcher)
    - [works for finding an item in an Array](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toContain%27%20matcher%20works%20for%20finding%20an%20item%20in%20an%20Array)
    - [also works for finding a substring](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toContain%27%20matcher%20also%20works%20for%20finding%20a%20substring)
  + [The 'toBeLessThan' matcher is for mathematical comparisons](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toBeLessThan%27%20matcher%20is%20for%20mathematical%20comparisons)
  + [The 'toBeGreaterThan' matcher is for mathematical comparisons](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toBeGreaterThan%27%20matcher%20is%20for%20mathematical%20comparisons)
  + [The 'toBeCloseTo' matcher is for precision math comparison](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toBeCloseTo%27%20matcher%20is%20for%20precision%20math%20comparison)
  + [The 'toThrow' matcher is for testing if a function throws an exception](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toThrow%27%20matcher%20is%20for%20testing%20if%20a%20function%20throws%20an%20exception)
  + [The 'toThrowError' matcher is for testing a specific thrown exception](https://jasmine.github.io/2.1/introduction.html?spec=Included%20matchers%3A%20The%20%27toThrowError%27%20matcher%20is%20for%20testing%20a%20specific%20thrown%20exception)
* [A spec](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec)
  + [is just a function, so it can contain any code](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20is%20just%20a%20function%2C%20so%20it%20can%20contain%20any%20code)
  + [can have more than one expectation](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20can%20have%20more%20than%20one%20expectation)
* [A spec using beforeEach and afterEach](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20using%20beforeEach%20and%20afterEach)
  + [is just a function, so it can contain any code](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20using%20beforeEach%20and%20afterEach%20is%20just%20a%20function%2C%20so%20it%20can%20contain%20any%20code)
  + [can have more than one expectation](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20using%20beforeEach%20and%20afterEach%20can%20have%20more%20than%20one%20expectation)
* [A spec using beforeAll and afterAll](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20using%20beforeAll%20and%20afterAll)
  + [sets the initial value of foo before specs run](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20using%20beforeAll%20and%20afterAll%20sets%20the%20initial%20value%20of%20foo%20before%20specs%20run)
  + [does not reset foo between specs](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20using%20beforeAll%20and%20afterAll%20does%20not%20reset%20foo%20between%20specs)
* [A spec](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec)
  + [can use the `this` to share state](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20can%20use%20the%20%60this%60%20to%20share%20state)
  + [prevents test pollution by having an empty `this` created for the next spec](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20prevents%20test%20pollution%20by%20having%20an%20empty%20%60this%60%20created%20for%20the%20next%20spec)
* [A spec](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec)
  + [is just a function, so it can contain any code](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20is%20just%20a%20function%2C%20so%20it%20can%20contain%20any%20code)
  + [can have more than one expectation](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20can%20have%20more%20than%20one%20expectation)
  + [nested inside a second describe](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20nested%20inside%20a%20second%20describe)
    - [can reference both scopes as needed](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec%20nested%20inside%20a%20second%20describe%20can%20reference%20both%20scopes%20as%20needed)
* [A spec](https://jasmine.github.io/2.1/introduction.html?spec=A%20spec)
* [Pending specs](https://jasmine.github.io/2.1/introduction.html?spec=Pending%20specs)
  + [can be declared 'xit'](https://jasmine.github.io/2.1/introduction.html?spec=Pending%20specs%20can%20be%20declared%20%27xit%27)
  + [can be declared with 'it' but without a function](https://jasmine.github.io/2.1/introduction.html?spec=Pending%20specs%20can%20be%20declared%20with%20%27it%27%20but%20without%20a%20function)
  + [can be declared by calling 'pending' in the spec body](https://jasmine.github.io/2.1/introduction.html?spec=Pending%20specs%20can%20be%20declared%20by%20calling%20%27pending%27%20in%20the%20spec%20body)
* [A spy](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy)
  + [tracks that the spy was called](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20tracks%20that%20the%20spy%20was%20called)
  + [tracks all the arguments of its calls](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20tracks%20all%20the%20arguments%20of%20its%20calls)
  + [stops all execution on a function](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20stops%20all%20execution%20on%20a%20function)
* [A spy, when configured to call through](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20to%20call%20through)
  + [tracks that the spy was called](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20to%20call%20through%20tracks%20that%20the%20spy%20was%20called)
  + [should not affect other functions](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20to%20call%20through%20should%20not%20affect%20other%20functions)
  + [when called returns the requested value](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20to%20call%20through%20when%20called%20returns%20the%20requested%20value)
* [A spy, when configured to fake a return value](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20to%20fake%20a%20return%20value)
  + [tracks that the spy was called](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20to%20fake%20a%20return%20value%20tracks%20that%20the%20spy%20was%20called)
  + [should not affect other functions](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20to%20fake%20a%20return%20value%20should%20not%20affect%20other%20functions)
  + [when called returns the requested value](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20to%20fake%20a%20return%20value%20when%20called%20returns%20the%20requested%20value)
* [A spy, when configured with an alternate implementation](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20with%20an%20alternate%20implementation)
  + [tracks that the spy was called](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20with%20an%20alternate%20implementation%20tracks%20that%20the%20spy%20was%20called)
  + [should not affect other functions](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20with%20an%20alternate%20implementation%20should%20not%20affect%20other%20functions)
  + [when called returns the requested value](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20with%20an%20alternate%20implementation%20when%20called%20returns%20the%20requested%20value)
* [A spy, when configured to throw an error](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20to%20throw%20an%20error)
  + [throws the value](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20configured%20to%20throw%20an%20error%20throws%20the%20value)
* [A spy](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy)
  + [can call through and then stub in the same spec](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20can%20call%20through%20and%20then%20stub%20in%20the%20same%20spec)
* [A spy](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy)
  + [tracks if it was called at all](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20tracks%20if%20it%20was%20called%20at%20all)
  + [tracks the number of times it was called](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20tracks%20the%20number%20of%20times%20it%20was%20called)
  + [tracks the arguments of each call](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20tracks%20the%20arguments%20of%20each%20call)
  + [tracks the arguments of all calls](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20tracks%20the%20arguments%20of%20all%20calls)
  + [can provide the context and arguments to all calls](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20can%20provide%20the%20context%20and%20arguments%20to%20all%20calls)
  + [has a shortcut to the most recent call](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20has%20a%20shortcut%20to%20the%20most%20recent%20call)
  + [has a shortcut to the first call](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20has%20a%20shortcut%20to%20the%20first%20call)
  + [tracks the context](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20tracks%20the%20context)
  + [can be reset](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%20can%20be%20reset)
* [A spy, when created manually](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20created%20manually)
  + [is named, which helps in error reporting](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20created%20manually%20is%20named%2C%20which%20helps%20in%20error%20reporting)
  + [tracks that the spy was called](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20created%20manually%20tracks%20that%20the%20spy%20was%20called)
  + [tracks its number of calls](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20created%20manually%20tracks%20its%20number%20of%20calls)
  + [tracks all the arguments of its calls](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20created%20manually%20tracks%20all%20the%20arguments%20of%20its%20calls)
  + [allows access to the most recent call](https://jasmine.github.io/2.1/introduction.html?spec=A%20spy%2C%20when%20created%20manually%20allows%20access%20to%20the%20most%20recent%20call)
* [Multiple spies, when created manually](https://jasmine.github.io/2.1/introduction.html?spec=Multiple%20spies%2C%20when%20created%20manually)
  + [creates spies for each requested function](https://jasmine.github.io/2.1/introduction.html?spec=Multiple%20spies%2C%20when%20created%20manually%20creates%20spies%20for%20each%20requested%20function)
  + [tracks that the spies were called](https://jasmine.github.io/2.1/introduction.html?spec=Multiple%20spies%2C%20when%20created%20manually%20tracks%20that%20the%20spies%20were%20called)
  + [tracks all the arguments of its calls](https://jasmine.github.io/2.1/introduction.html?spec=Multiple%20spies%2C%20when%20created%20manually%20tracks%20all%20the%20arguments%20of%20its%20calls)
* [jasmine.any](https://jasmine.github.io/2.1/introduction.html?spec=jasmine.any)
  + [matches any value](https://jasmine.github.io/2.1/introduction.html?spec=jasmine.any%20matches%20any%20value)
  + [when used with a spy](https://jasmine.github.io/2.1/introduction.html?spec=jasmine.any%20when%20used%20with%20a%20spy)
    - [is useful for comparing arguments](https://jasmine.github.io/2.1/introduction.html?spec=jasmine.any%20when%20used%20with%20a%20spy%20is%20useful%20for%20comparing%20arguments)
* [jasmine.objectContaining](https://jasmine.github.io/2.1/introduction.html?spec=jasmine.objectContaining)
  + [matches objects with the expect key/value pairs](https://jasmine.github.io/2.1/introduction.html?spec=jasmine.objectContaining%20matches%20objects%20with%20the%20expect%20key%2Fvalue%20pairs)
  + [when used with a spy](https://jasmine.github.io/2.1/introduction.html?spec=jasmine.objectContaining%20when%20used%20with%20a%20spy)
    - [is useful for comparing arguments](https://jasmine.github.io/2.1/introduction.html?spec=jasmine.objectContaining%20when%20used%20with%20a%20spy%20is%20useful%20for%20comparing%20arguments)
* [Manually ticking the Jasmine Clock](https://jasmine.github.io/2.1/introduction.html?spec=Manually%20ticking%20the%20Jasmine%20Clock)
  + [causes a timeout to be called synchronously](https://jasmine.github.io/2.1/introduction.html?spec=Manually%20ticking%20the%20Jasmine%20Clock%20causes%20a%20timeout%20to%20be%20called%20synchronously)
  + [causes an interval to be called synchronously](https://jasmine.github.io/2.1/introduction.html?spec=Manually%20ticking%20the%20Jasmine%20Clock%20causes%20an%20interval%20to%20be%20called%20synchronously)
  + [Mocking the Date object](https://jasmine.github.io/2.1/introduction.html?spec=Manually%20ticking%20the%20Jasmine%20Clock%20Mocking%20the%20Date%20object)
    - [mocks the Date object and sets it to a given time](https://jasmine.github.io/2.1/introduction.html?spec=Manually%20ticking%20the%20Jasmine%20Clock%20Mocking%20the%20Date%20object%20mocks%20the%20Date%20object%20and%20sets%20it%20to%20a%20given%20time)
* [Asynchronous specs](https://jasmine.github.io/2.1/introduction.html?spec=Asynchronous%20specs)
  + [should support async execution of test preparation and expectations](https://jasmine.github.io/2.1/introduction.html?spec=Asynchronous%20specs%20should%20support%20async%20execution%20of%20test%20preparation%20and%20expectations)
  + [long asynchronous specs](https://jasmine.github.io/2.1/introduction.html?spec=Asynchronous%20specs%20long%20asynchronous%20specs)
    - [SPEC HAS NO EXPECTATIONS takes a long time](https://jasmine.github.io/2.1/introduction.html?spec=Asynchronous%20specs%20long%20asynchronous%20specs%20takes%20a%20long%20time)

1. Install nodeJs
2. node –v to see node version
3. create a new project folder

f:/progs/angular/jasmine\_Test1

1. create a file package.json
2. go to the project directory and run the below command

npm install –g

1. npm install –g karma-cli
2. npm install karma –g --save -dev
3. npm install jasmine-core
4. npm install karma-jasmine karma-chrome-launcher –save -dev
5. Karma init karma.conf.js
6. Update the package.json with the below content

{

"scripts":{

"test": "karma start karma.conf.js"

},

"dependencies": {

"karma": "^1.7.1",

"karma-chrome-launcher": "^2.2.0",

"karma-jasmine": "^1.1.0"

}

}

1. Npm install karma-jasmine-html-reporter –save –dev
2. Karma start