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## Goal

Understand the project koa, from from whole to part.

## Design

### Thought



## Plan

### Tasks

module	task	description	time	status
Project structure	Vision	Project vision	0.5h	Done!
	Environment	Running environment		Done!

	Tool stack	Dev tool, test tool, deploy tool. (a tool stack flow and a function table)		Done!
	Dependencies	Find all the dependents of the project, and know those dependencies' functions. (dependency chart and a function table)	3h	Done!
	Modules	Distinct modules and find the relationship of all modules. (dependency chart and a function table)	1h	Done!
	Project interface	Interfaces of project, like API, UI. ( an interface table)	1h	Done!
<b>Program procedure</b>	Core data structure	The core data structures used in the project.	1h	Done!
	Core algorithm	The core data algorithms used in the project.	2h	Done!
<b>Project details</b>	Knowledge	The knowledge you do not know	1h	Done!
	Style	Style of project: comment, naming, lint, closure. Slips, law.	1h	Done!
	Tricks	Programing tricks.	1h	Done!
	Other			
<b>evaluation</b>	Advantage	The advantages of this project	0.5h	Done!
	Disadvantage	The disadvantage of this project		
	Scenes	The scenes it suits and not suits		

## Project structure

### Vision

Koa is a new web framework designed by the team behind Express, which aims to be a smaller, more expressive, and more robust foundation for web applications and APIs. Through leveraging generators Koa allows you to ditch callbacks and greatly increase error-handling. Koa does not bundle any middleware within core, and provides an elegant suite of methods that make writing servers fast and enjoyable.

<http://koajs.com/>

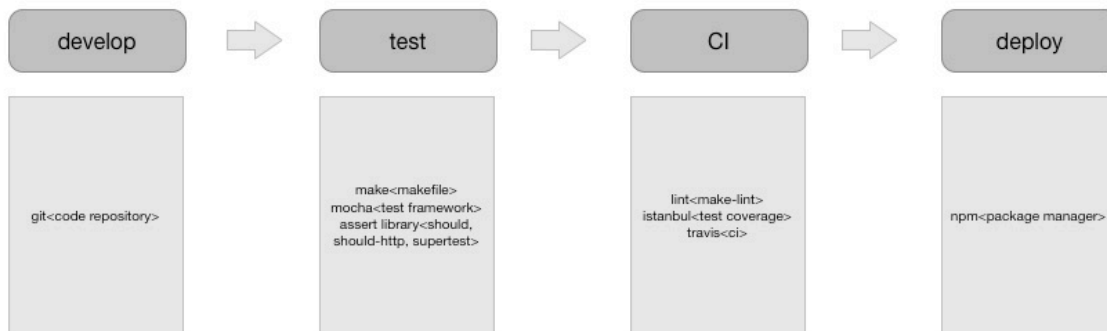
### Environment

node V4+

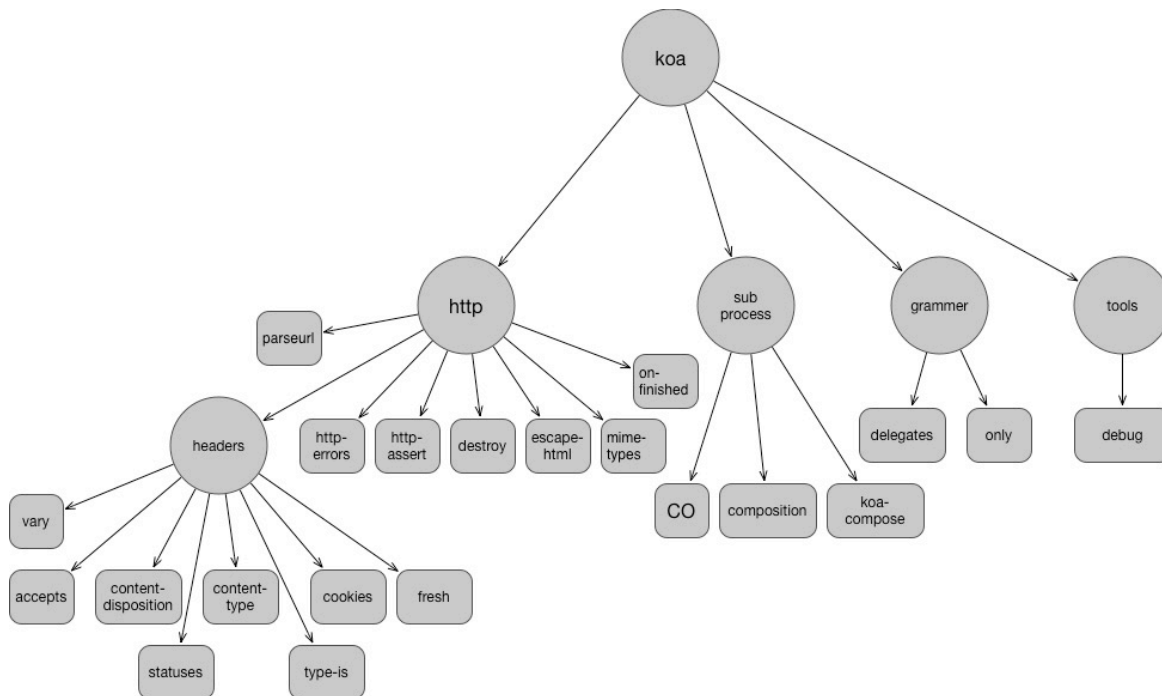
node 0.12 with the --harmony-generators or --harmony flag.

iojs >= 1.0.0

## Tool stack



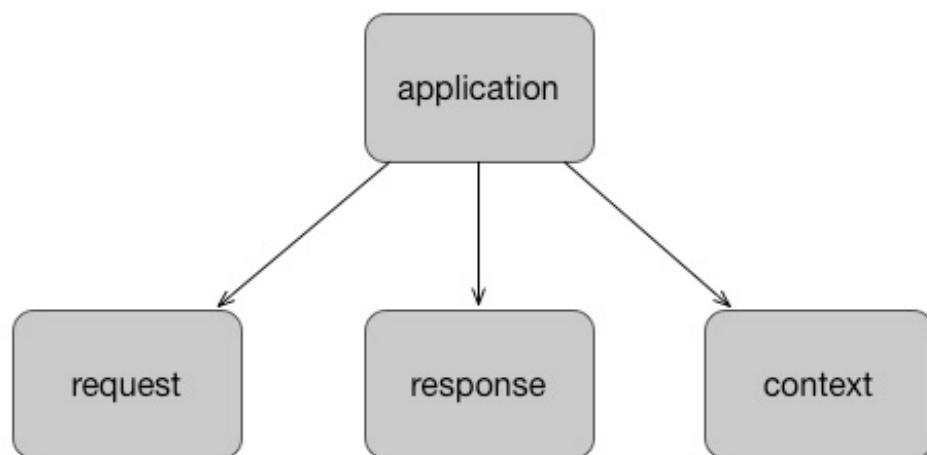
## Dependencies



Module name	Function description
accepts	Extract accept type from request object
composition	Compose generator functions or async await functions to a function.
content-disposition	Create and parse HTTP Content-Disposition header <a href="https://www.w3.org/Protocols/rfc2616/rfc2616-sec19.html">https://www.w3.org/Protocols/rfc2616/rfc2616-sec19.html</a>
content-type	Create and parse HTTP Content-Type header
cookies	Getting and setting HTTP(s) cookies

<b>delegates</b>	Node method and accessor delegation utility
<b>destroy</b>	Destroy a stream
<b>escape-html</b>	Escape string for use in HTML
<b>fresh</b>	HTTP response freshness testing
<b>http-assert</b>	Assert with status codes.
<b>koa-compose</b>	Compose a group of middleware to a middleware
<b>mime-types</b>	content-type
<b>on-finished</b>	Execute a callback when a HTTP request closes, finishes, or errors.
<b>only</b>	return whitelisted properties of an object
<b>parseurl</b>	Cache <code>url.parse</code> results
<b>vary</b>	Manipulate the HTTP Vary header <a href="http://mark.koli.ch/understanding-the-http-vary-header-and-caching-proxies-squid-etc">http://mark.koli.ch/understanding-the-http-vary-header-and-caching-proxies-squid-etc</a>

## Modules



Module name	Function description
<b>application</b>	Entrance. App interfaces.
<b>context</b>	Export context interfaces, delegate request and response's interfaces.
<b>request</b>	koa request object. Define koa request interfaces. Like headers, status, message, body, url, length, accept etc. It's a wrapper to original request object.
<b>response</b>	koa response object. It's a wrapper to original response object.

## Project Interface

interface	description	invoke	parameters		result
<b>app.use</b>	add koa middleware	app.use(fn)	0	fn	app
<b>app.callback</b>	koa server handler genetator	app.callback()			server handler

[Program procedure](#)

[Core data structure](#)

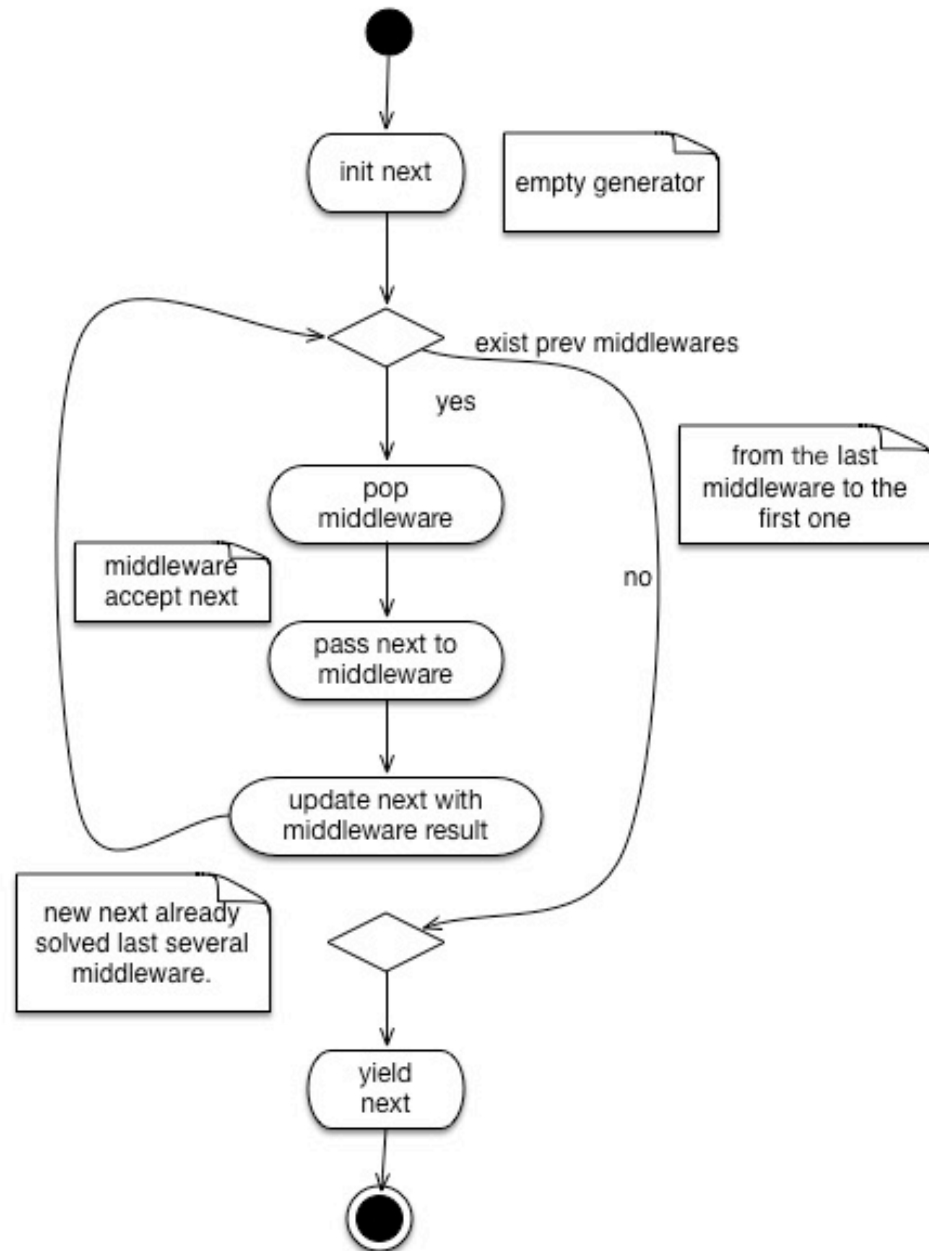
koa request object
header url origin href method path query queryString search host hostname fresh stale idempotent socket charset length protocol secure ip ips subdomains accepts acceptsEncodings acceptsCharsets acceptsLanguages type
set get is inspect toJSON

boa response object
socket header headers status message body length headerSent vary redirect attachment type lastModified etag writable
is set get append remove inspect toJSON

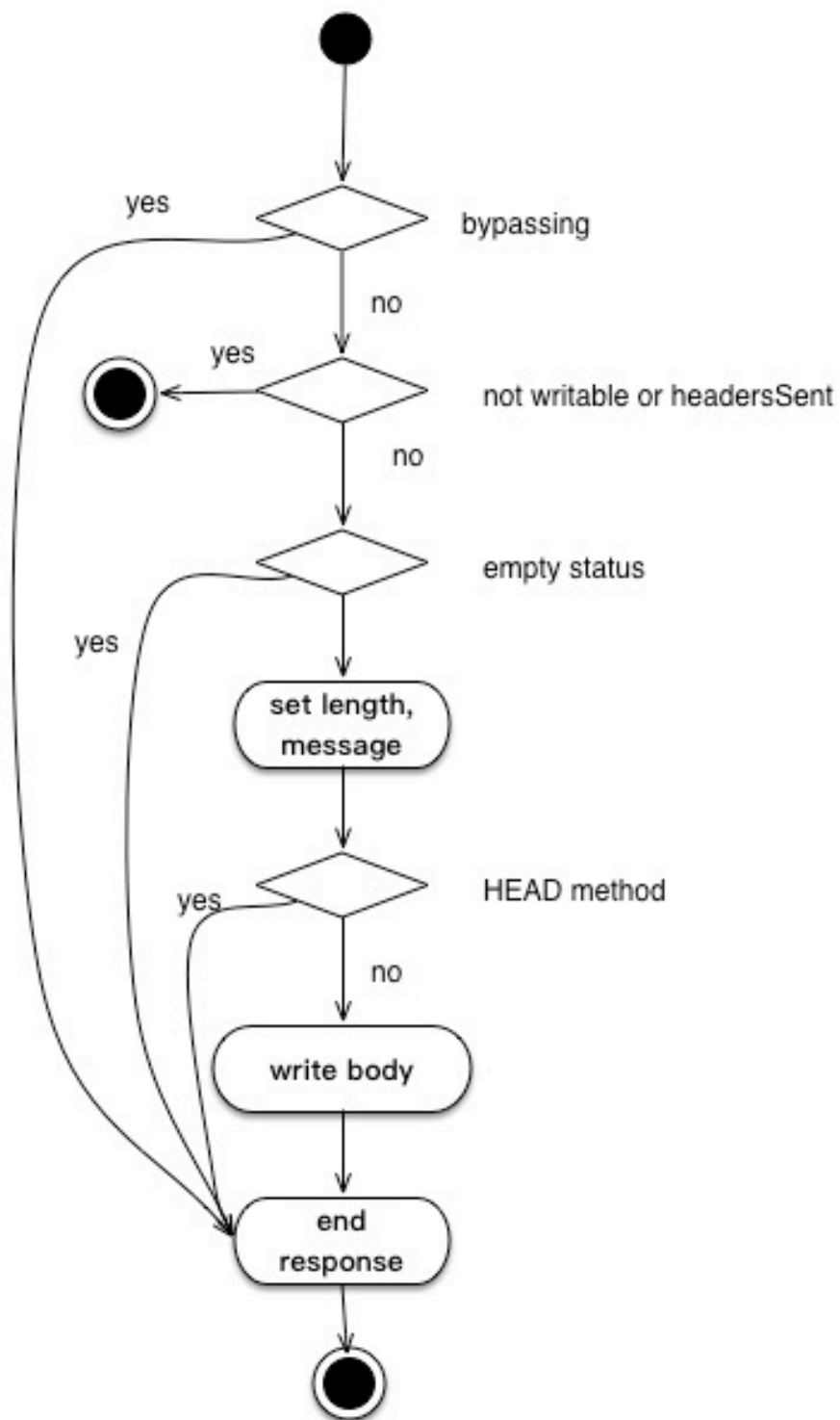
message:  
statusMessage

core algorithm

- Compose middleware

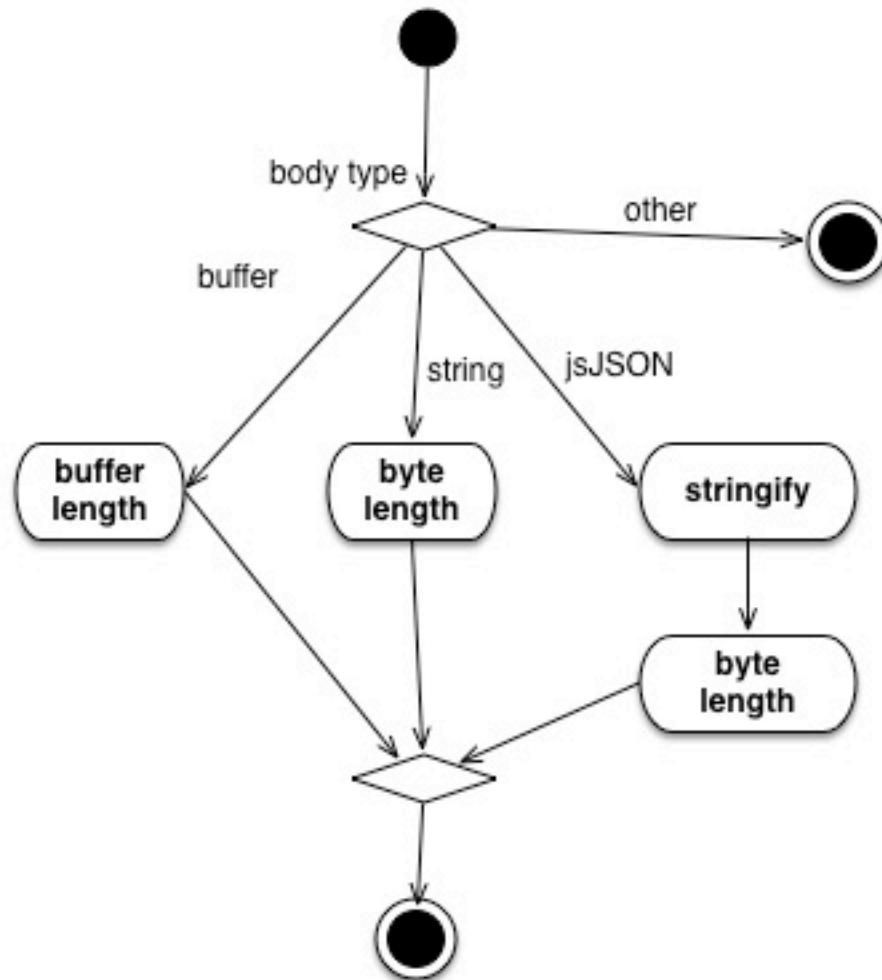


- Response algorithm





- Content length



[Project details](#)

[Knowledge](#)

target	method
<b>Calculate http host</b>	When proxy is enable, get X-Forwarded-Host field of headers. Otherwise get Host. <code>x-Forwarded-For: client, proxy1, proxy2</code>
<b>idempotent</b>	GET HEAD PUT DELETE OPTIONS TRACE

<b>protocol</b>	If socket.encrypted, https; if not proxy, http; trust X-Forward-proto
<b>ip</b>	The first ip of X-Forwarded-For, or socket.remoteAddress
<b>accept</b>	Accept-Encoding: gzip, deflate Accept-Charset: utf-8, iso-8859-1;q=0.2, utf-7;q=0.5 Accept-Language: en;q=0.8, es, pt
<b>Content-Disposition</b>	filename
<b>Last-Modified</b>	toUTCString
<b>etag</b>	<div>"123456789"      – A strong ETag validator</div> <div>W/"123456789"   – A weak ETag validator</div>

## Style

- ES5 setter, getter

## Tricks

- cache queryString, query object for request object

## evaluation

### advantage

- generator as a hack solution
- simple and light

### disadvantage or risk

- learning costs
- costs of converting express middleware to koa mid

## scenes

- no babel, higher level node
- ecosystem