



UNIVERSITY of LIMERICK
OLLSCOIL LUIMNIGH

Project log Autumn semester Week 8

MEng Information & Network Security

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Project Supervisor: Sean McGrath

24/10/17- 30/10/17

1 Log Entries

1.1 Entry 24/10/17:

Today I wrote up the week 7 log. I also touched up on the layout of the previous logs.

1.2 Entry 25/10/17:

Today I created a Bluemix free trial account and emailed my supervisor. I also researched Bluemix's vast catalog of services. I regret not doing this earlier.

1.3 Entry 26/10/17:

Today I installed the Java JDK on my Ubuntu OS. I also researched how I could incorporate Neo4j into Bluemix. I found that I could do this through a machine that is running Ubuntu IBM POWER systems OS. I will look into how this might be achieved through virtualization at a later stage in the project. I will be putting the graph database feature at a low priority as learning both the Docker CLI and the many Bluemix services are on the critical path.

1.4 Entry 27/10/17:

Today I researched IBM's Cloudant database service. It can provide multiple representations of data allowing easy transition to various forms of NoSQL databases, this will prove useful for developing the graph database features at the later stage of project.

I managed to simulate a sensor using IBM's Watson IOT service. This proved to be more difficult than it should have as I was confused by the Bluemix interface at first. I learned how to use NODE Red, which is a visual tool for wiring the internet of things. This will be a crucial tool in designing the correct load balancing tests as well as providing relevant pseudo GPS data, meaning transmitting randomised GPS coordinates within the college campus.

I installed the Bluemix command line interface. This took a little longer than it should have because I also had to install various Cloud Foundry plugins as well.

I tried to follow a MEAN stack (MongoDB, Express, Angular js, Node js) tutorial but ran into issues deploying.

I switched to a basic Docker Bluemix container deployment tutorial as it was more relevant to the critical path of the project. This also took a while as I was simultaneously learning new CLI commands (and the Bluemix interface) as well as documenting the process with screenshots.

2 Tasks completed

Week 7 log

Create Bluemix account

Email supervisor

Simulate IoT sensor database


Install Bluemix CLI



Install Bluemix CLI plugins









Docker Bluemix demo

3 GIT Repositories


3.1 INS-Thesis-Documentation:





 16117743 / INS-Thesis-Documentation

 Watch  Star 0

 Code  Issues 0  Pull requests 0  Projects 0  Wiki  Pulse  Graphs  Settings

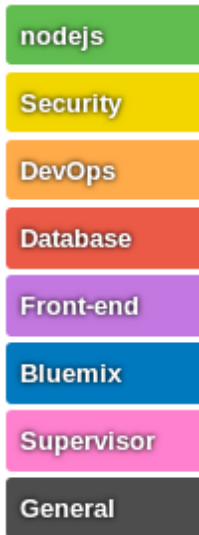
Branch: master

 Commits on Oct 24, 2016

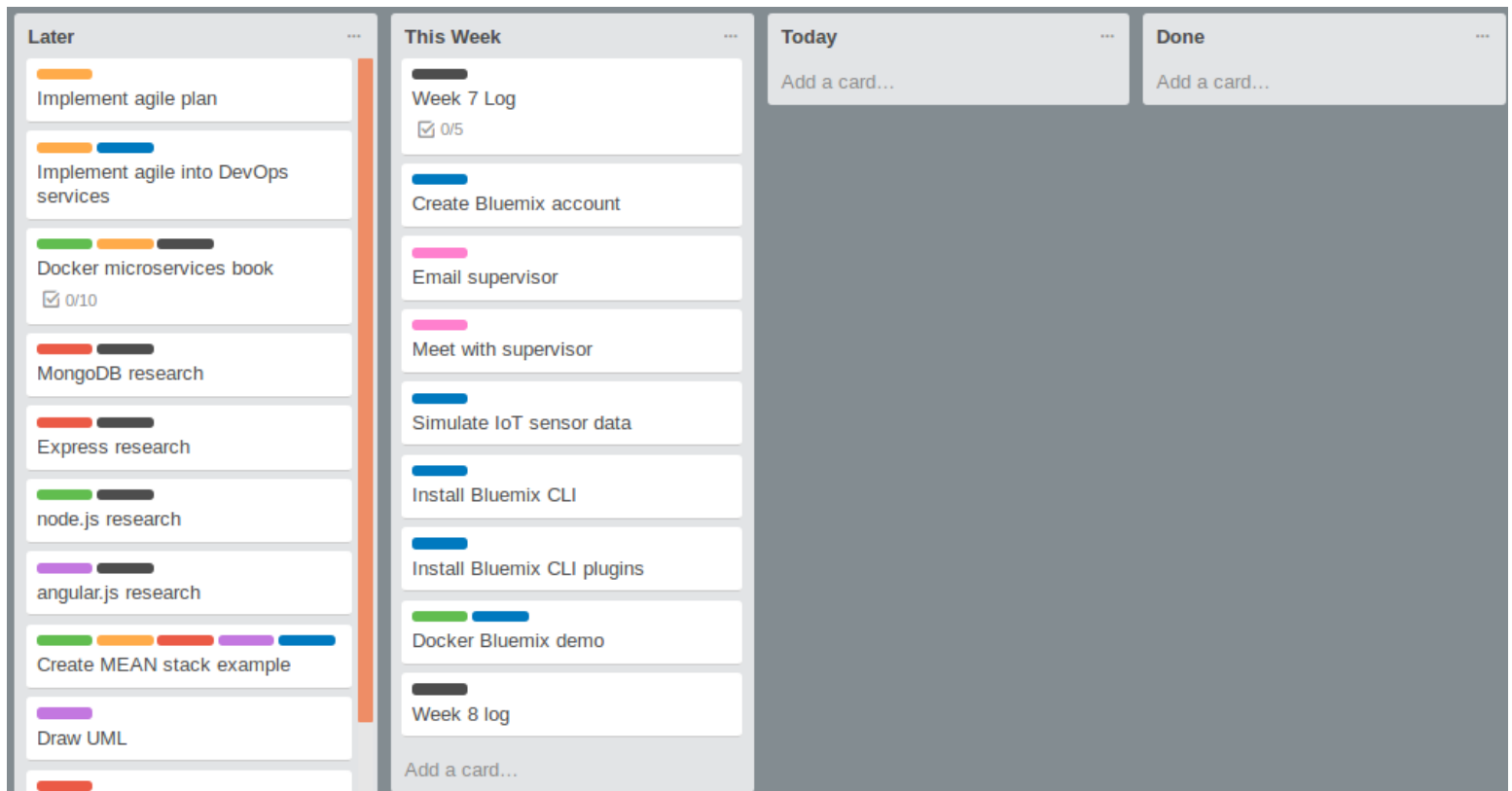
	autumn-report-2 16117743 committed 3 days ago	 8756cb6
	week-7-log 16117743 committed 3 days ago	 1f37d02

4 Trello boards

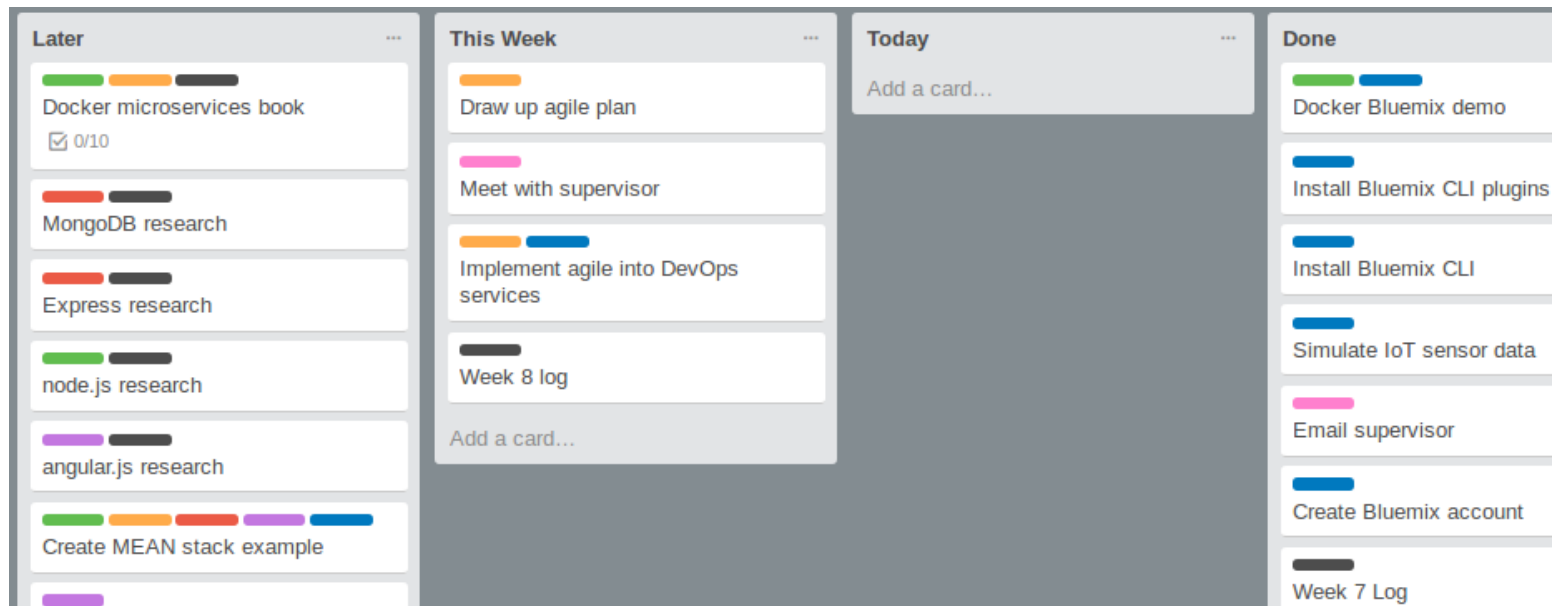
4.1 Updated labels:



4.1 Board at the start of the week:

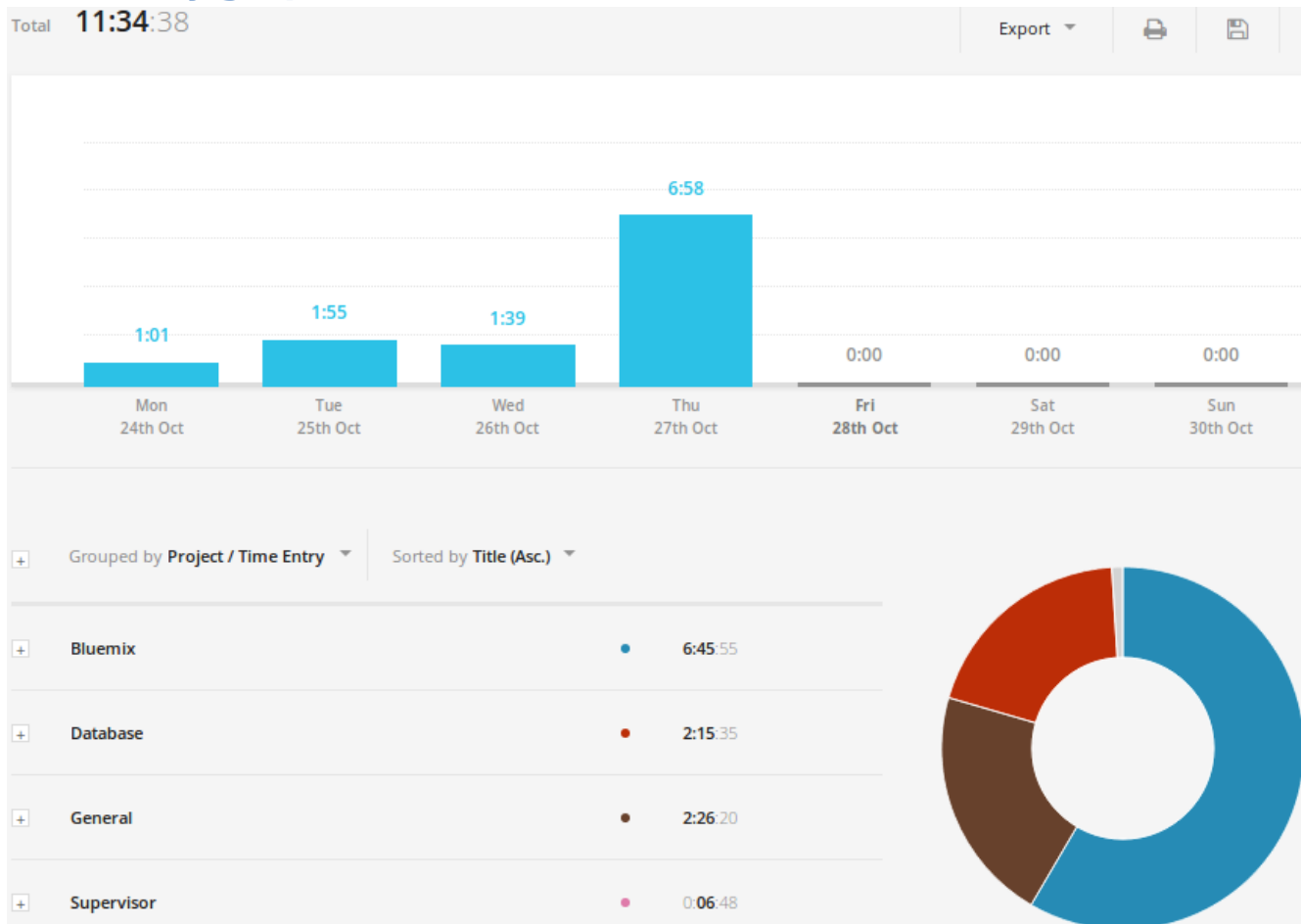


4.2 Board at the end of the week:



5 Toggl Time Logs

5.1 Weekly graphs:



5.2 Weekly log:

week 8 log pictures	GENERAL	0:19:47	10:03 PM – 10:22 PM
Bluemix Docker tutorial	BLUEMIX	1:42:22	8:02 PM – 9:44 PM
Bluemix MEAN stack video	BLUEMIX	0:38:40	6:01 PM – 6:39 PM
Bluemix CLI installation	BLUEMIX	0:58:33	3:56 PM – 4:54 PM
IoT simulation	BLUEMIX	2:37:50	12:32 PM – 3:09 PM
IBM cloudant research	DATABASE	0:41:11	11:36 AM – 12:17 PM
Wed, 26 Oct 1 h 39 min			
neo4j research	DATABASE	0:50:02	8:52 PM – 9:42 PM
JDK installation	GENERAL	0:49:09	7:58 PM – 8:47 PM
Tue, 25 Oct 1 h 55 min			
IBM POWER8 research	DATABASE	0:44:22	7:58 PM – 8:42 PM
Reflect and organize	GENERAL	0:16:09	6:02 PM – 6:18 PM
IBM container services research	BLUEMIX	0:48:30	5:49 PM – 6:37 PM
email supervisor	SUPERVISOR	0:06:48	11:45 AM – 11:51 AM
Mon, 24 Oct 1 h 01 min			
week 7 log	GENERAL	0:42:11	6:22 PM – 7:04 PM
updating previous logs	GENERAL	0:19:04	4:58 PM – 5:17 PM

6 Progress

6.1 Bluemix CLI plugins

active-deploy – v.0.1.105

Bluemix CLI plugin for Active Deploy to help you update applications and containers with no downtime. Works for Cloud Foundry apps and for IBM Containers.

auto-scaling – v.0.2.2

Bluemix CLI plug-in for Auto-Scaling service

IBM-Containers – v.1.0.0

Plugin to operate IBM Containers service

Network Security Group – v.0.1.2

Bluemix Network Security Group plug-in

private-network-peering – v.0.1.1

Plugin to configure and manage private network peering between two IBM® Bluemix® spaces

vpn – v.1.4.0

Bluemix CLI plug-in for IBM VPN service

6.2 logging into bluemix

```
Installing plugin ibm-containers-linux_x64...
OK
Plugin IBM-Containers v0.8.951 successfully installed.
tom@tom-pc:~/bluemixcli/Bluemix_CLI$ cf login -a api.eu-gb.bluemix.net
API endpoint: api.eu-gb.bluemix.net

Email> 16117743@studentmail.ul.ie

Password>
Authenticating...
Credentials were rejected, please try again.

Password>
Authenticating...
OK

Targeted org UL-Thesis

Targeted space test

API endpoint: https://api.eu-gb.bluemix.net (API version: 2.54.0)
User: 16117743@studentmail.ul.ie
Org: UL-Thesis
Space: test
tom@tom-pc:~/bluemixcli/Bluemix_CLI$
```

6.3 Logging into cloud foundry

```
tom@tom-pc:~/Documents/Masters-Project/Git/dms1/madeline-chat$ cf ic login
Deleting old configuration file...
Retrieving client certificates for IBM Containers...
Storing client certificates in /home/tom/.ice/certs/...

Storing client certificates in /home/tom/.ice/certs/containers-api.ng.bluem
387...

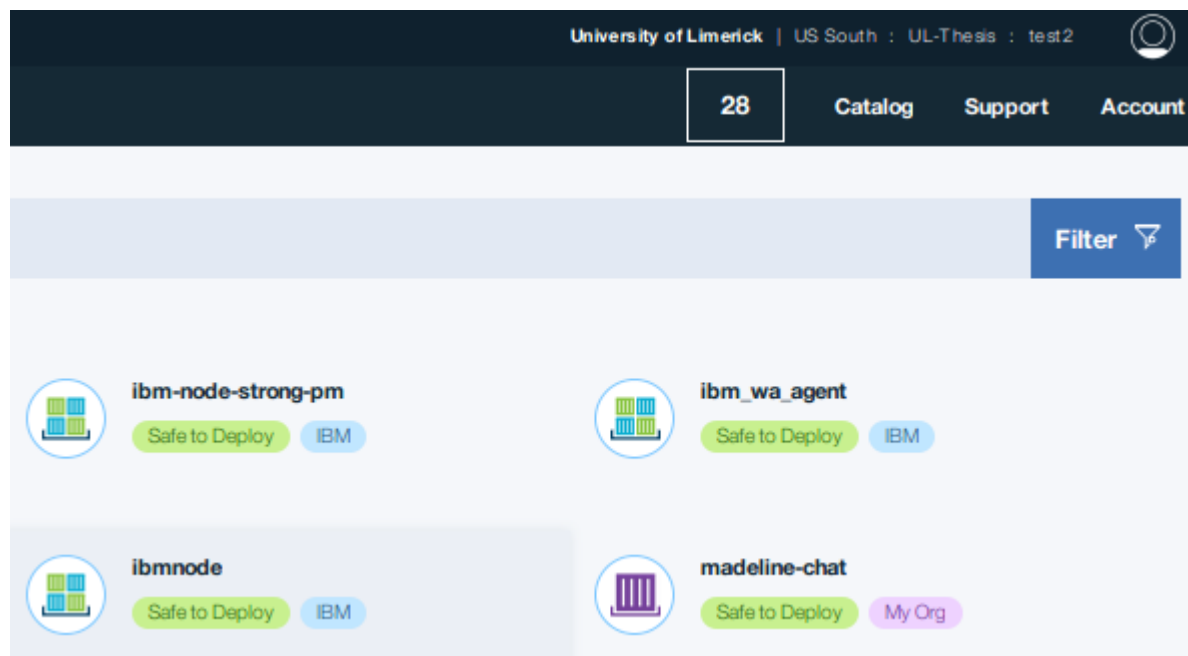
OK
The client certificates were retrieved.

Checking local Docker configuration...
You are authenticated with the IBM Containers API,
```


6.4 Building “madeline-chat” docker image in Bluemix

```
tom@tom-pc:~/Documents/Masters-Project/Git/dms1/madeline-chat$ docker build -t tomspace/madeline-chat ./
Sending build context to Docker daemon 67.58 kB
Step 1 : FROM registry.ng.bluemix.net/ibmnode:latest
latest: Pulling from ibmnode
71a21fdea81d: Pull complete
```

6.5 “madeline-chat” Image now in Bluemix catalog



6.6 Redis Cloud database service created

Services 3/10 Used		
NAME	SERVICE OFFERING	PLAN
Redis-chatter	Redis Cloud	30mb
UL-sensor-data-app-cloudantNoSQLDB	Cloudant NoSQL DB	Lite
UL-sensor-data-app-iotf-service	Internet of Things Platform	iotf-service-free

6.7 “link” service to container that has “madeline-chat” image.

Service binding:


Bind services to your containers from the services in your Bluemix space.

Select a service Add

Select a service ▼


- UL-sensor-data-app-cloudantNoSQLDB
- UL-sensor-data-app-iotf-service
- Redis-chatter

6.8 Madeline-chat container building

 **madeline-chat-container** Status: ● Building

Resources		Cont
SIZE	Pico	Crea
MEMORY	64 MB	Port
QUOTA USAGE	3.1%	Publi
1.938 GB still available		Volur
		Imag
		Stor

6.9 Madeline-chat container running



madeline-chat-container

Status: ● Running

Resources

SIZE	Pico
MEMORY	64 MB
QUOTA USAGE	3.1%

1.938 GB still available

6.10 Container details

Container details

Created	10/27/16, 9:27 PM
Ports	80
Public IP	<div>169.46.1</div>
Private IP	172.30.0.2
Volumes	None
Image	tomspace/madeline-chat:latest
Storage	4 GB

6.11 BlueChatter application running on public IP address

169.46.145.0

eu bluemix login

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BlueChatter

Enter a username to get started

Go!

Built By The BlueMix Dev Advocate Team

6.12 Docker CLI “ps” (please show) containers running

```
tom@tom-pc:~/Documents/Masters-Project/Git/dms1/madeline-chat$ docker ps
CONTAINER ID        IMAGE                                     COMMAND                  CREATED
STATUS            PORTS                NAMES
4b909375-a13       registry.ng.bluemix.net/tomspace/madeline-chat:latest   "              8 minutes ago
Running 5 minutes ago  169.46.145.0:80->80/tcp  madeline-chat-container

tom@tom-pc:~/Documents/Masters-Project/Git/dms1/madeline-chat$ docker images
REPOSITORY              TAG         IMAGE ID            CREATED             SIZE
registry.ng.bluemix.net/tomspace/madeline-chat  latest     3d83ea6835c6       57 minutes ago    210 MB
```

6.13 Node-RED IoT simulator

