UNIVERSITY of LIMERICK

OLLSCOIL LUIMNIGH

Project log Autumn semester Week 6

MEng Information & Network Security

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Project Supervisor: Sean McGrath

10/10/16- 16/10/16

1 Log Entries

1.1 Entry 11/10/16:

Today I collected various bookmarks for researching Bluemix competitors.

1.2 Entry 12/10/16:

Today I read various bookmarks on Bluemix competitors.

1.3 Entry 13/10/16:

Today I setup git repositories on www.github.com as well as commit and push my Semester 1 week 5 log to the website.

I successfully installed Docker on my ubuntu OS.

1.4 Entry 16/10/16:

This week I managed to get a significant amount of research on databases done for my project.

2 Tasks completed:

Collected Bluemix competitor bookmarks.

Read Bluemix competitor bookmarks.

Create Github repositories.

Take photos of hand written notes.

Finish week 5 log.

Installed Docker.

Amazon container service research.

Microsoft Azure container service research.

IBM Bluemix research.

Docker research.

Initial database research.

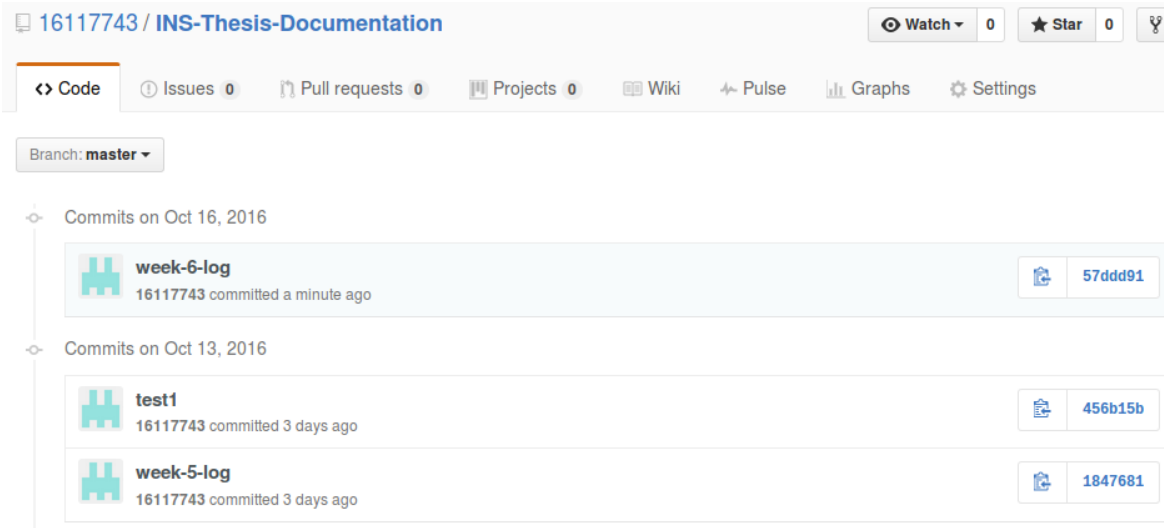
NoSQL database research.

Neo4j graph database research.

Layout Autumn report.

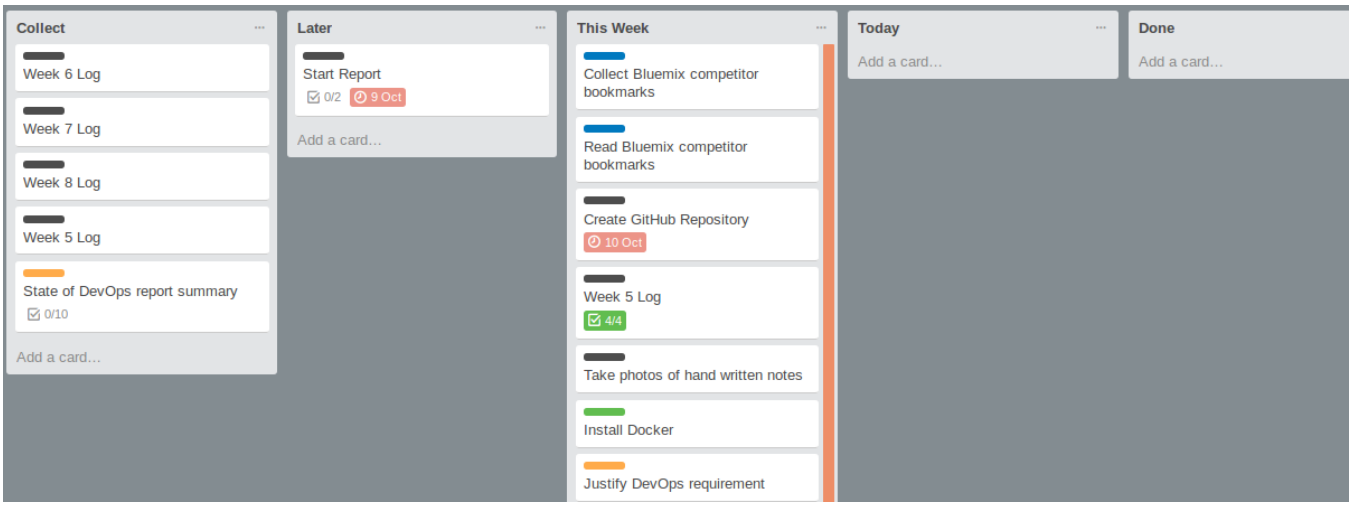
3 GIT Repositories:

3.1 INS-Thesis-Documentation

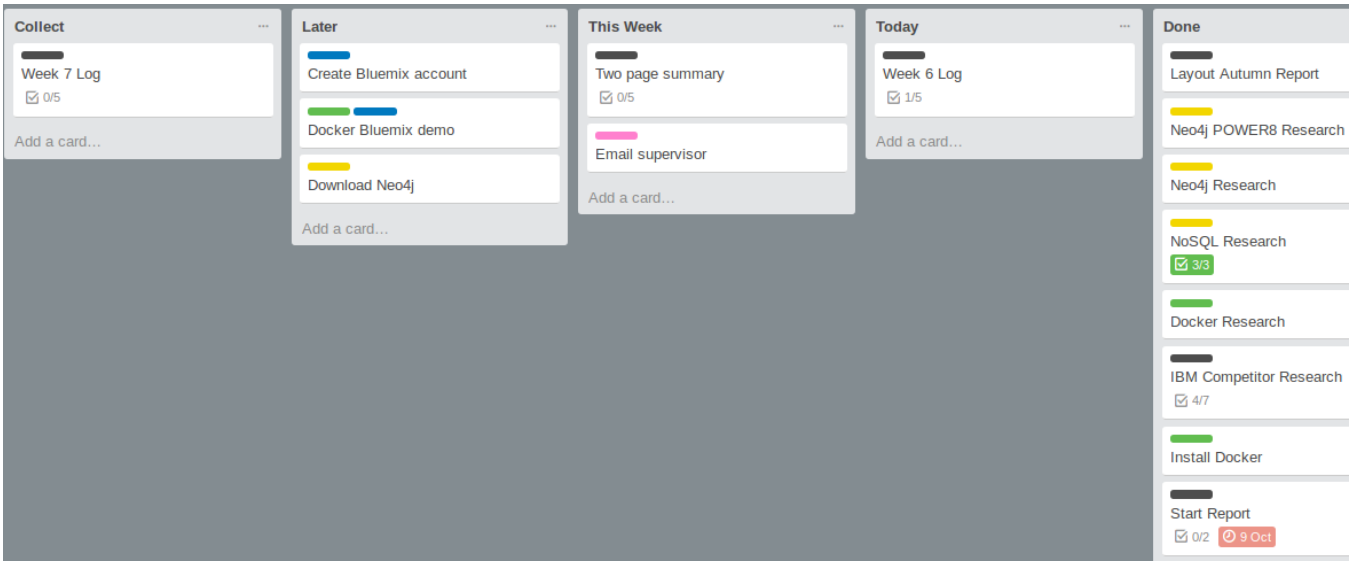


4 Trello boards

4.1 Board at the start of the week:

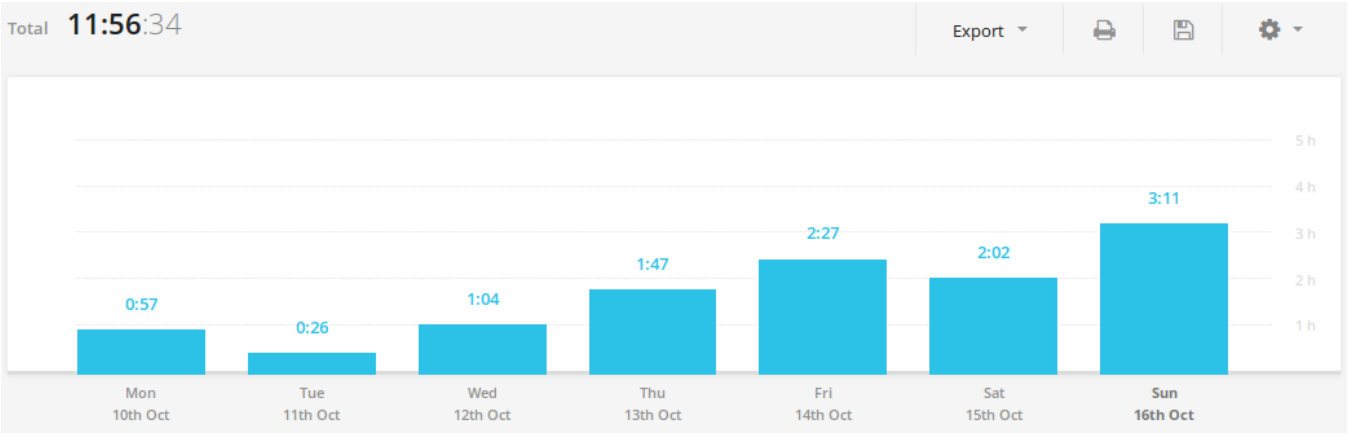


4.2 Board at the end of the week:

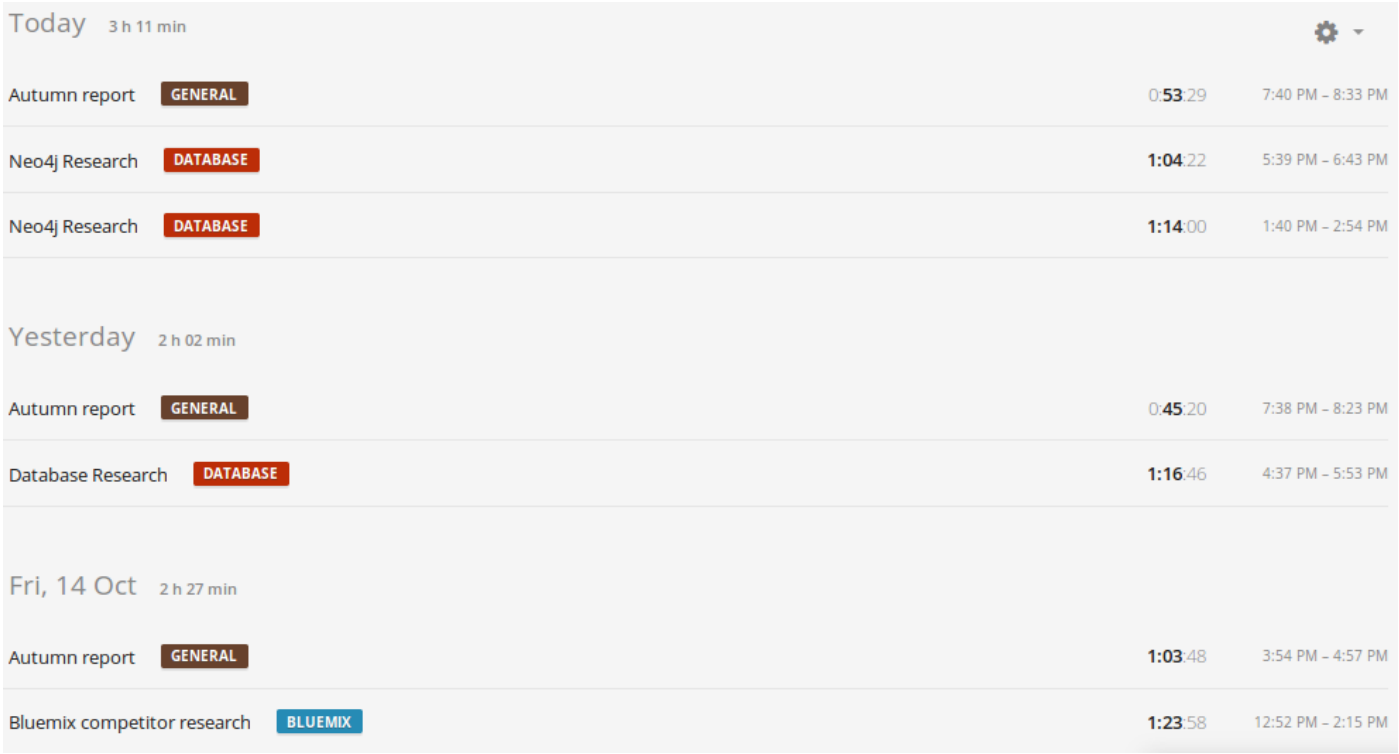


5 Toggl Time Logs

5.1 Weekly time Log bar chart:



5.2 Weekly Time Log:



Thu, 13 Oct 1 h 47 min

week 6 log GENERAL 0:19:18 2:27 PM – 2:46 PM

installing Docker DOCKER 0:25:29 1:54 PM – 2:20 PM

configuring Git GENERAL 0:42:42 1:02 PM – 1:44 PM

setting up Github respositories GENERAL 0:19:54 12:03 PM – 12:22 PM

Wed, 12 Oct 1 h 04 min

reading Bluemix competitor bookmarks BLUEMIX 1:04:09 8:14 PM – 9:18 PM

Tue, 11 Oct 0 h 26 min

collecting Bluemix competitor bookmarks BLUEMIX 0:26:15 7:11 PM – 7:37 PM

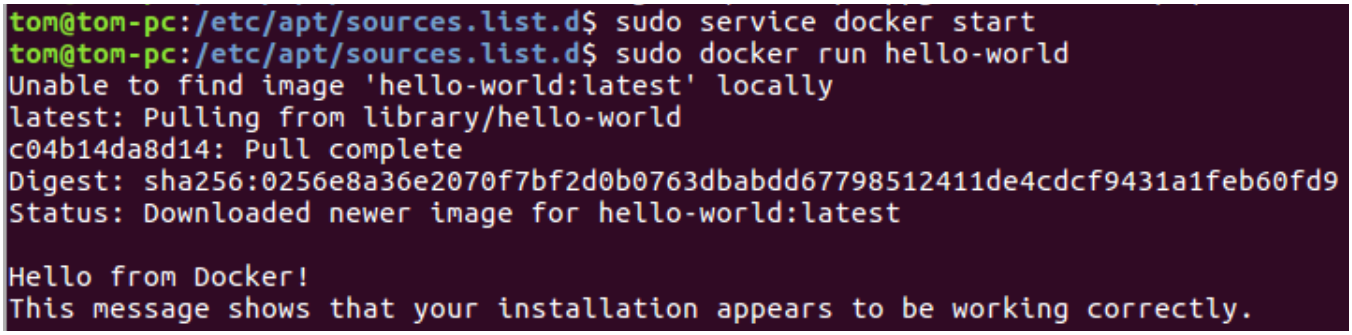
Mon, 10 Oct 0 h 57 min

Week 5 log GENERAL 0:57:04 7:0

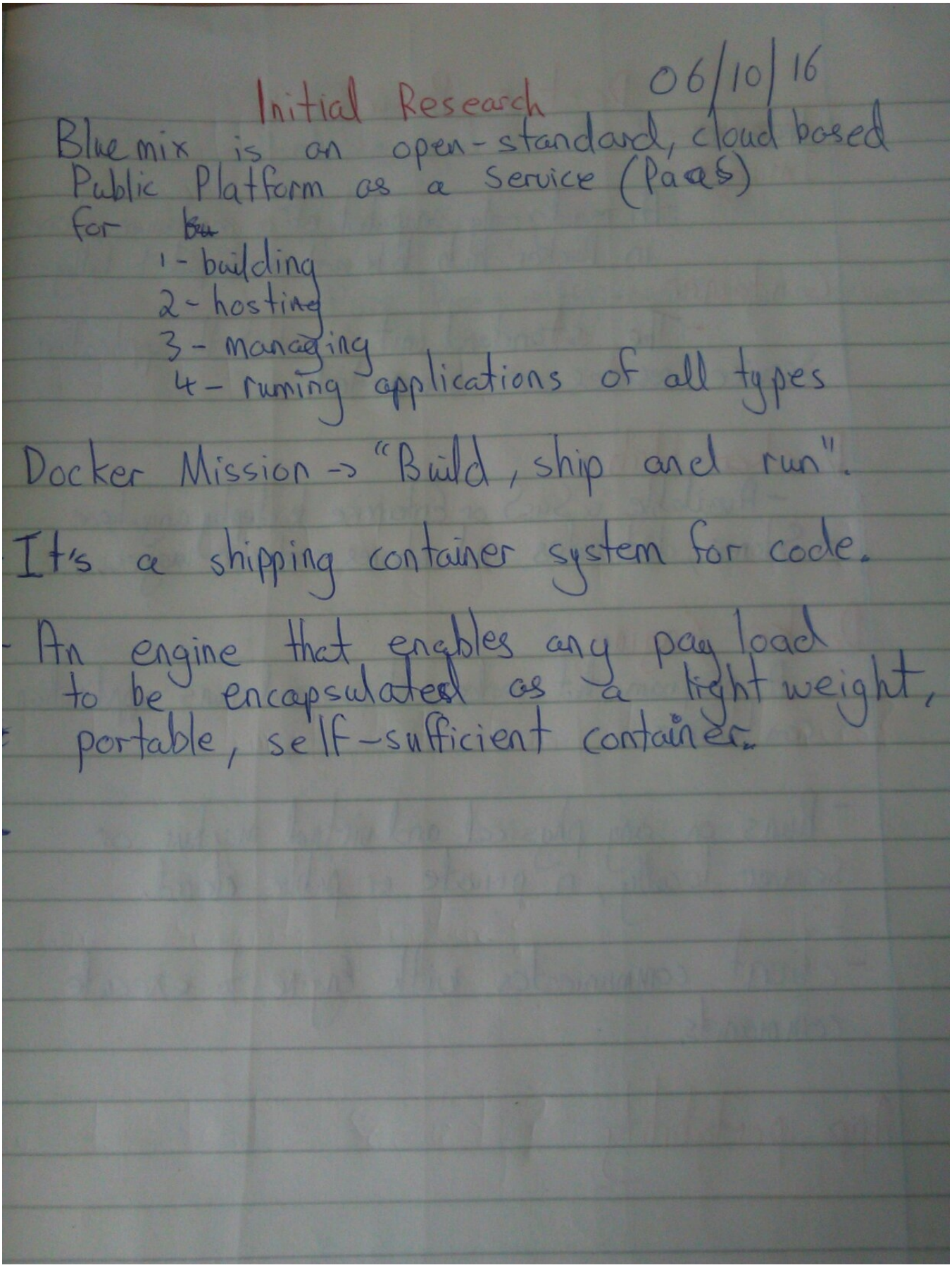
5.3 Weekly log Pie Chart:

6 Pictures

6.1 Docker working correctly



6.2 Initial Research page 1



Initial Research 06/10/16

Bluemix is an open-standard, cloud based Public Platform as a Service (PaaS) for

1- building
2- hosting
3- managing
4- runing applications of all types

Docker Mission -> "Build, ship and run".

It's a shipping container system for code.

- An engine that enables any payload to be encapsulated as a light weight, portable, self-sufficient container.

6.3 Initial Research page 2

Docker Basics

~~Image -~~

Image -

- A read only snapshot of a container store in Docker Hub to be used as a template for building co

Container

- The standard unit in which the application service resides or transported.

Docker Hub -

- Available is SaaS or Enterprise to deploy anywhere
- Stores, distributes and shares container images.

Docker Engine

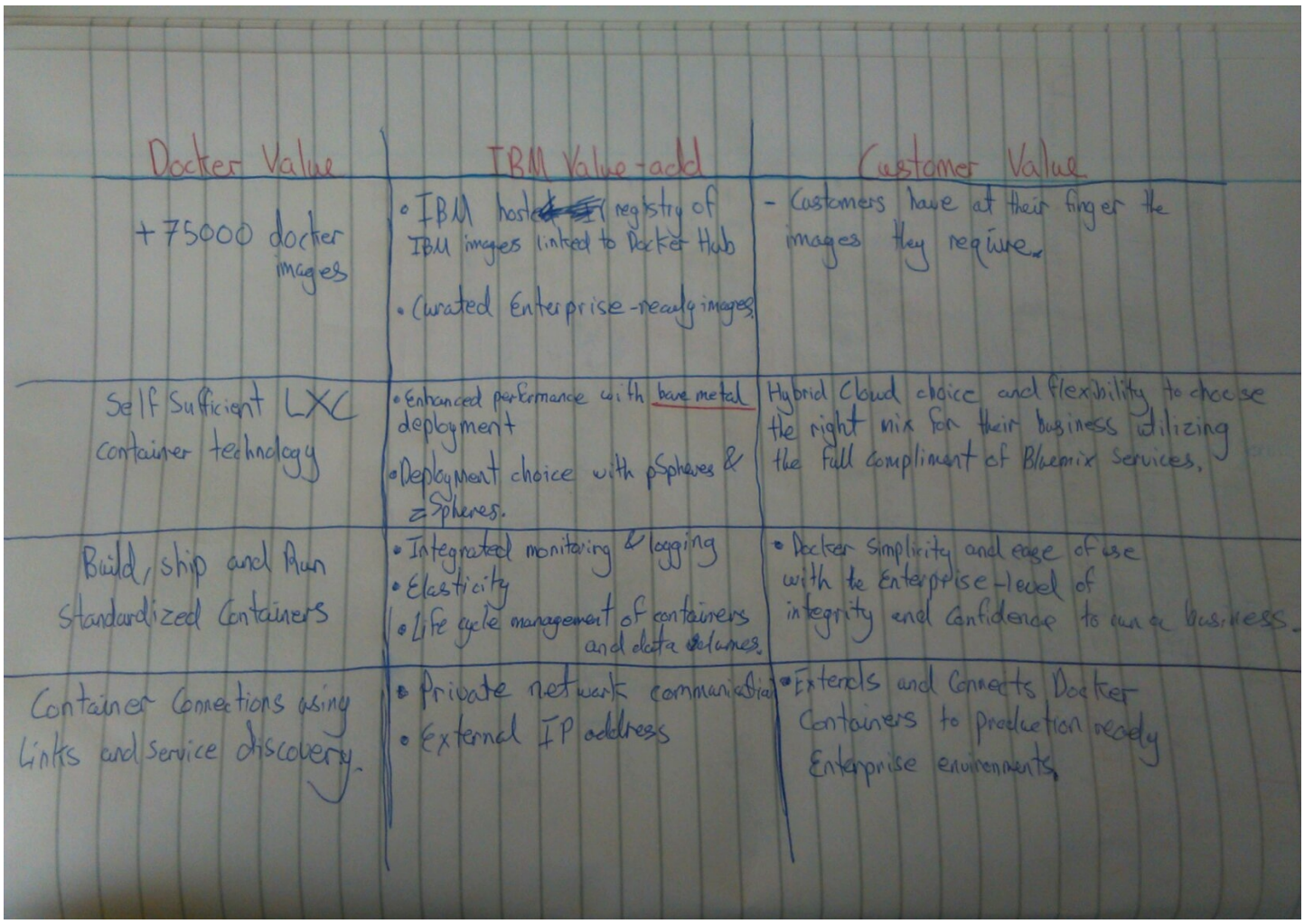
- A program that creates, ships and runs application containers

- Runs on any physical and virtual machine or server locally, in private or public cloud.

- client communicates with Engine to execute commands.

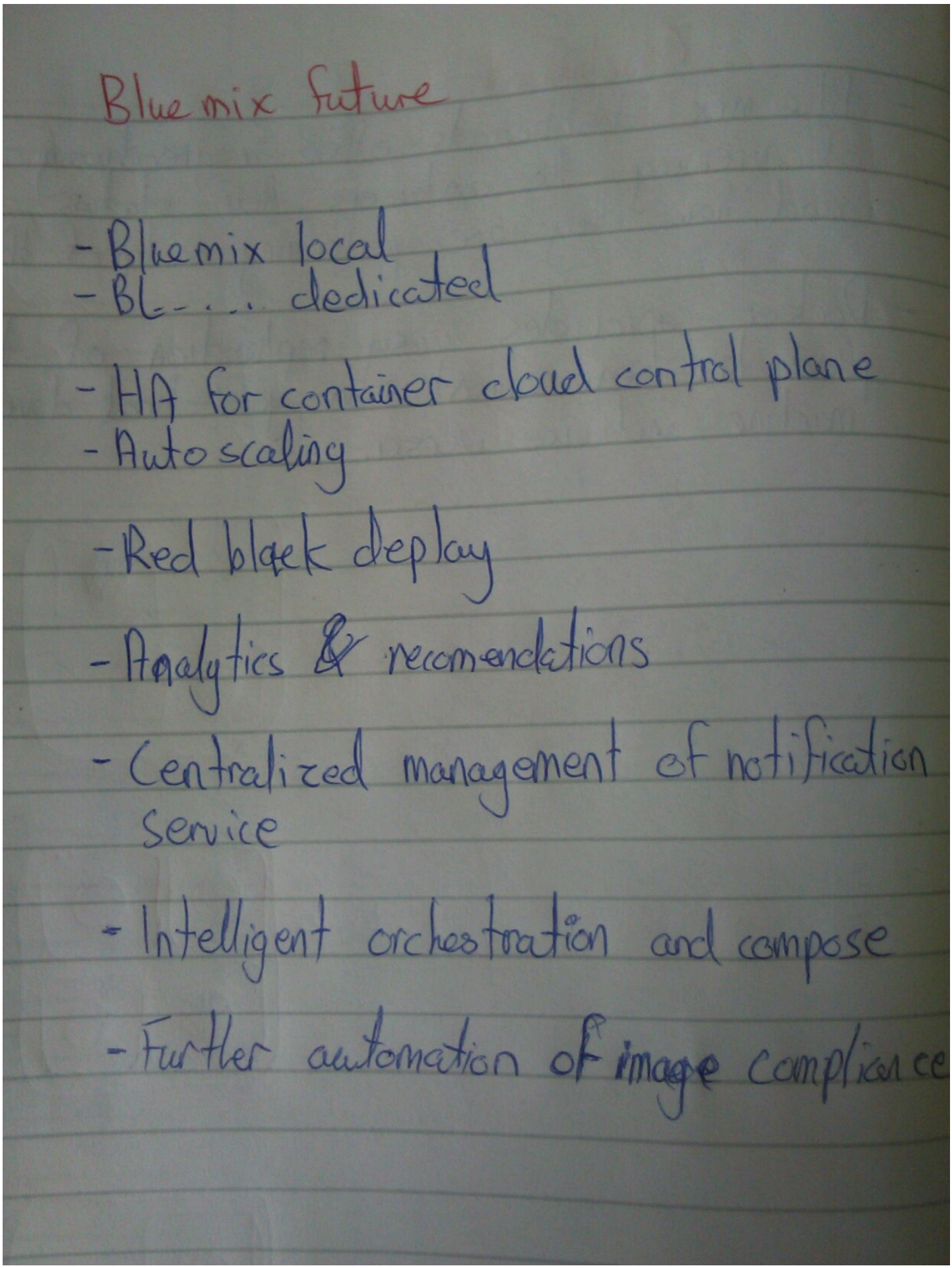
App portability

6.4 Initial Research page 3

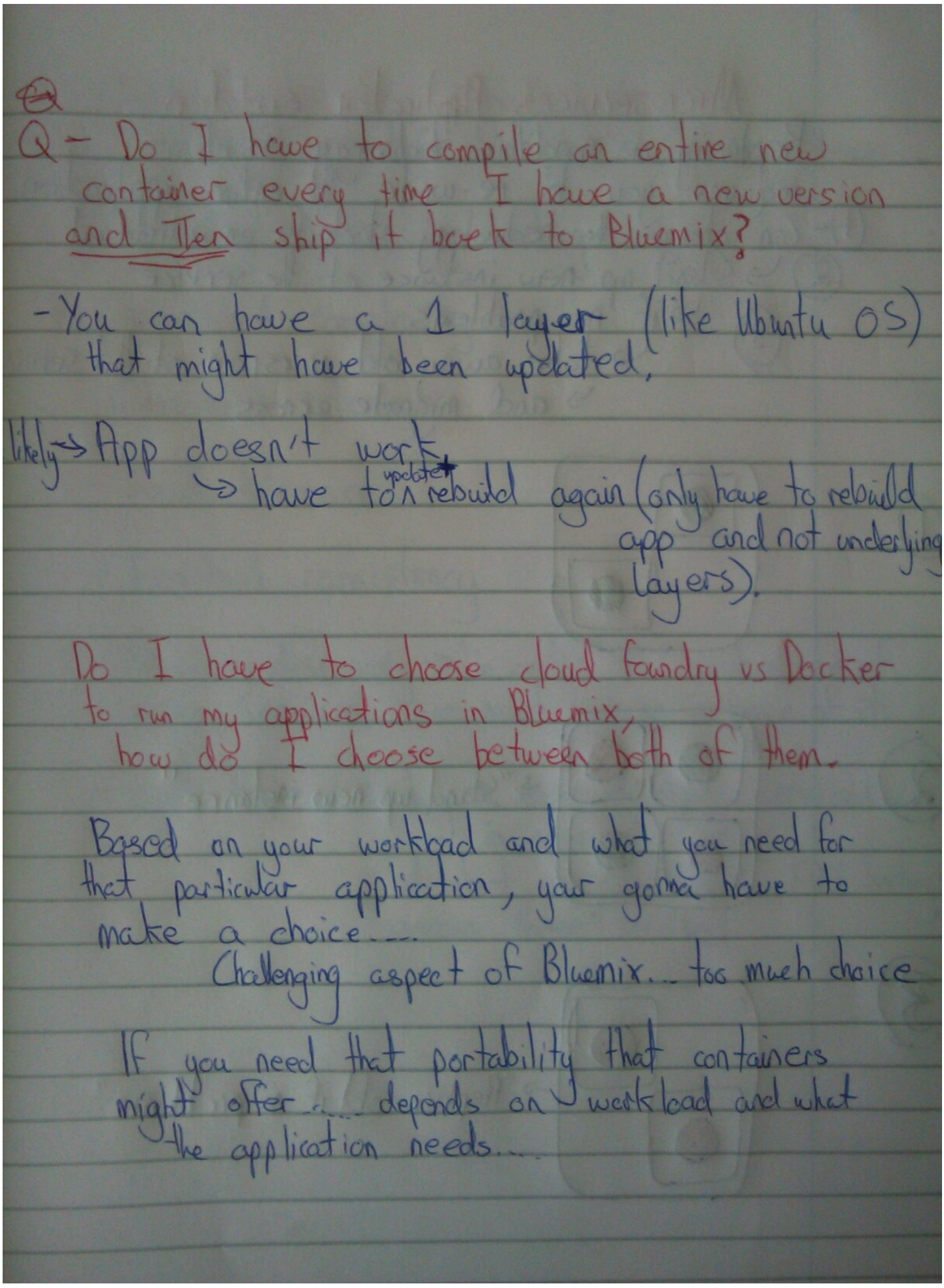


Docker Value	IBM Value-add	Customer Value
+75000 docker images	• IBM hosted registry of IBM images linked to Docker Hub • Curated Enterprise-ready images	- Customers have at their finger the images they require.
Self Sufficient LXC container technology	• Enhanced performance with bare metal deployment • Deployment choice with pSpheres & zSpheres.	Hybrid Cloud choice and flexibility to choose the right mix for their business utilizing the full compliment of Bluemix services.
Build, ship and Run Standardized Containers	• Integrated monitoring & logging • Elasticity • Life cycle management of containers and data volumes.	• Docker simplicity and ease of use with the Enterprise-level of integrity and confidence to run a business.
Container Connections using Links and service discovery.	• Private network communication • External IP address	• Extends and Connects Docker Containers to production ready Enterprise environments.

6.5 Initial Research page 4



6.6 Initial Research of Bluemix page 5



Q - Do I have to compile an entire new container every time I have a new version and Then ship it back to Bluemix?

- You can have a 1 layer (like Ubuntu OS) that might have been updated.

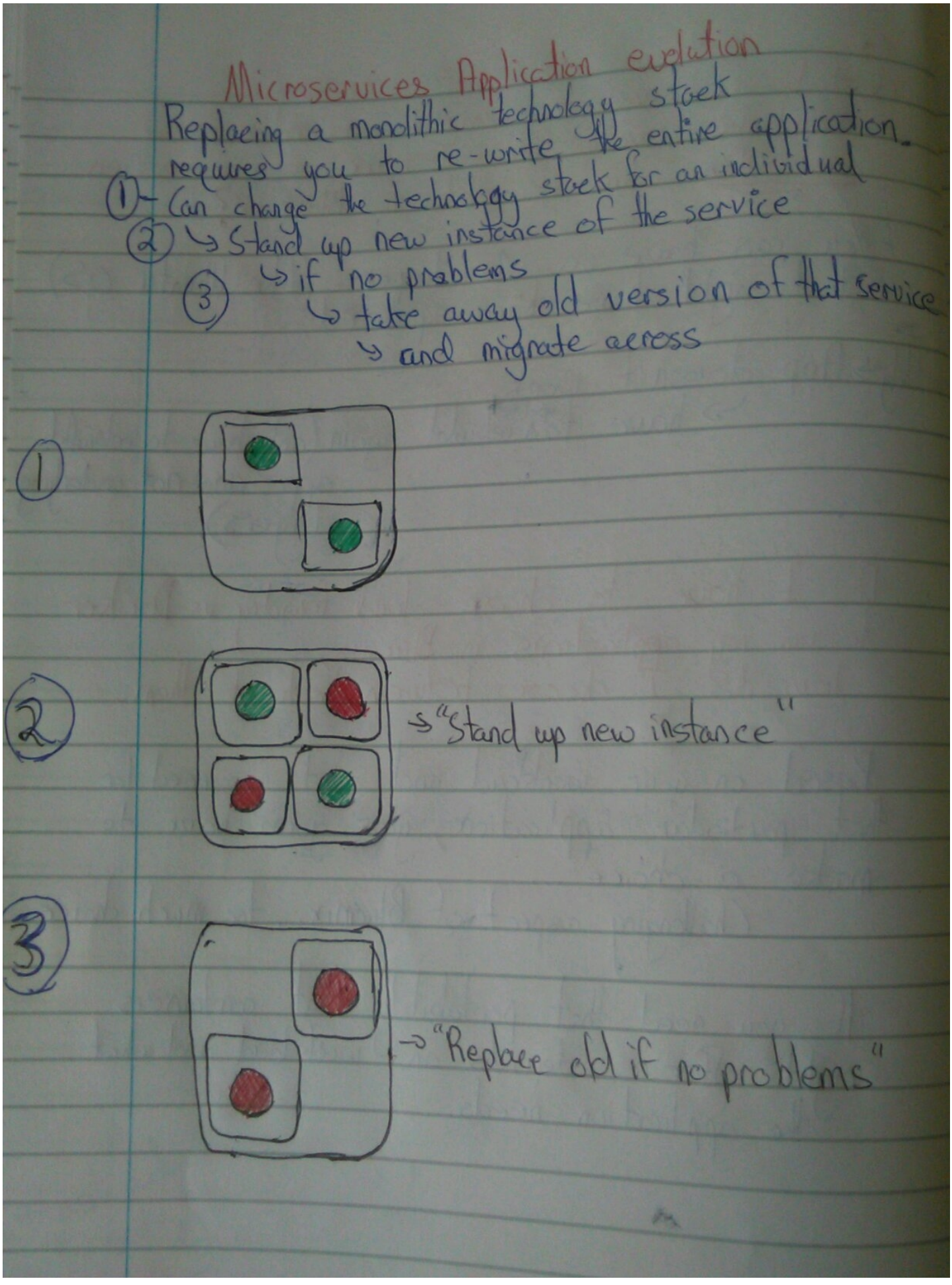
likely → App doesn't work
↳ have to rebuild (updated) again (only have to rebuild app and not underlying layers).

Do I have to choose cloud foundry vs Docker to run my applications in Bluemix, how do I choose between both of them.

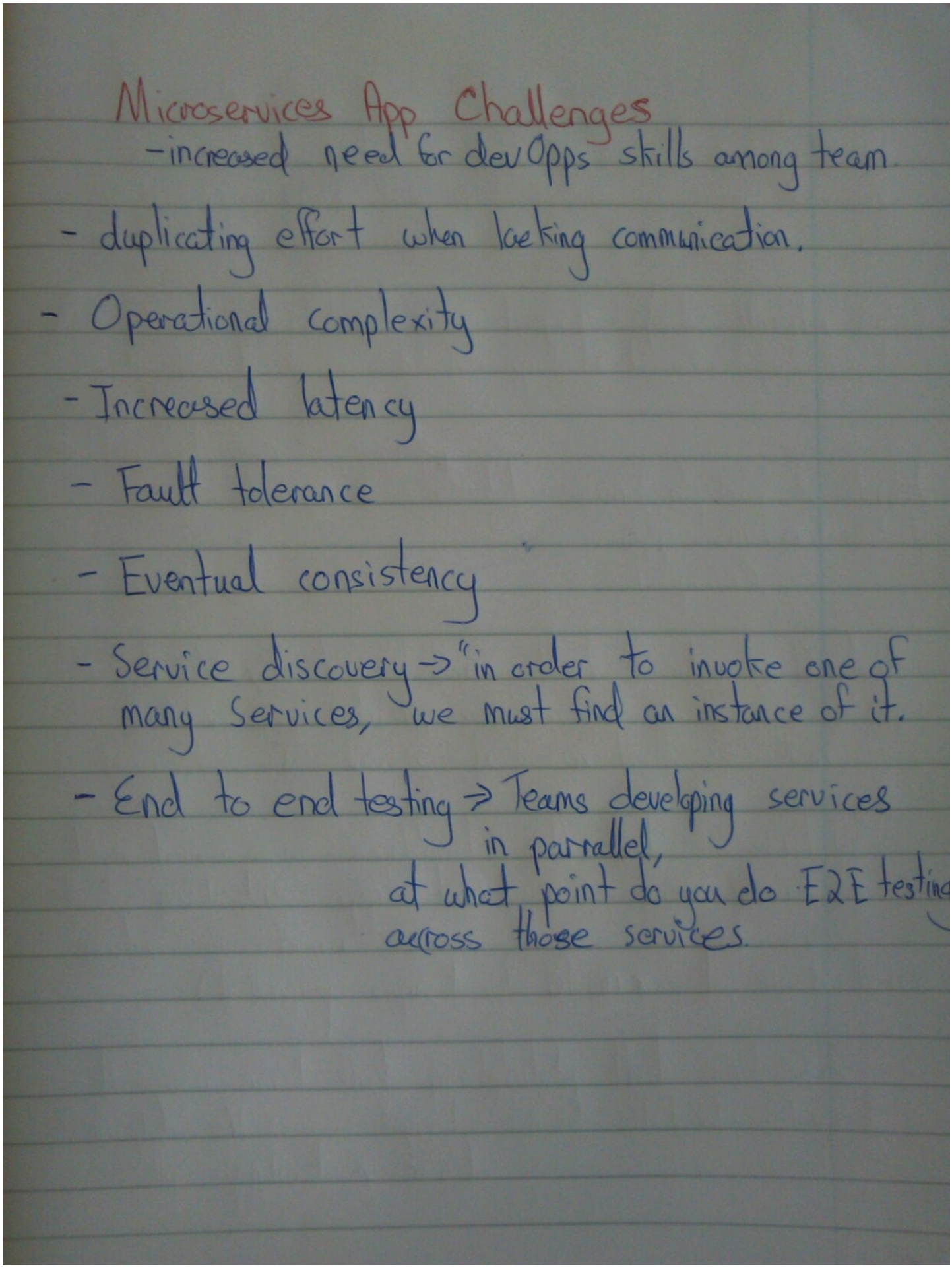
Based on your workload and what you need for that particular application, your gonna have to make a choice....
Challenging aspect of Bluemix... too much choice

If you need that portability that containers might offer.... depends on workload and what the application needs...

6.7 Initial Research page 6



6.8 Initial Research page 7



Microservices App Challenges
- increased need for devOpps skills among team.
- duplicating effort when lacking communication.
- Operational complexity
- Increased latency
- Fault tolerance
- Eventual consistency
- Service discovery → "in order to invoke one of many services, we must find an instance of it.
- End to end testing → Teams developing services in parrallel, at what point do you do E2E testing across those services.