Basic concept of Docker and containerized services

Kittipat Saengkaenpetch
11 December 2019

Outline

- Cloud Computing and Basic concept of Container
- NodeJS Programming
  - Simple “Hello World”
  - Simple “Hello World” web server
- How to containerize services
  - Containerize “Hello World” web server

Processing Power


We need processing power.

IT'S A LONG STORY – **(Mild Frozen spoiler)**

The scene in which Elsa walks out onto the balcony of her newly constructed ice palace is 218 frames long, and includes the film's longest frame to render. The single frame took more than 132 hours to render (that's more than five days).

(Source)

Large Scale Computing Use case

User

Service Provider

IoT cloudserve @TEIN

CHULA ENGINEERING

GIST

NECTEC a member of NSTDA

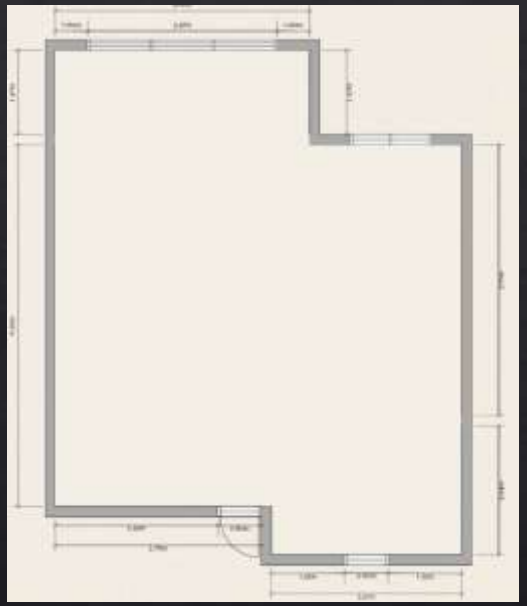
UniNet

UNIVERSITI MALAYA

AsiaConnect

EUROPEAN UNION

TEIN

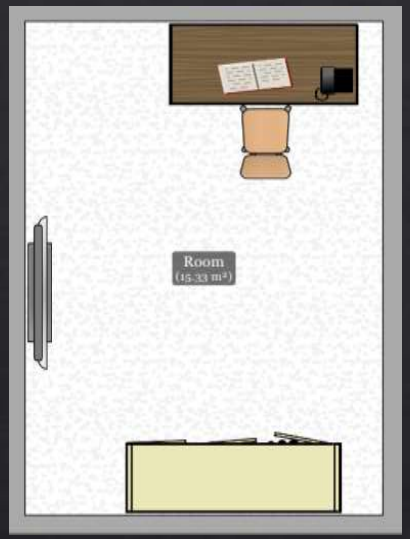


Based OS

Based OS + Runtime

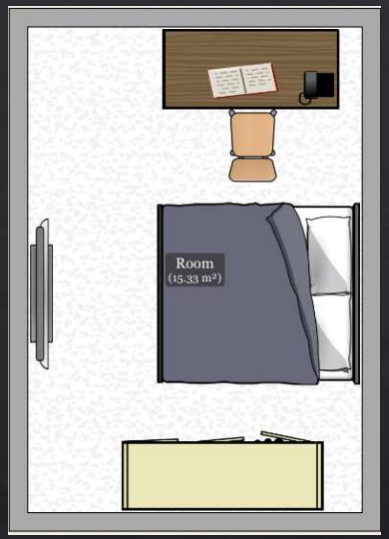
Based OS + Runtime + App

Container



+

=

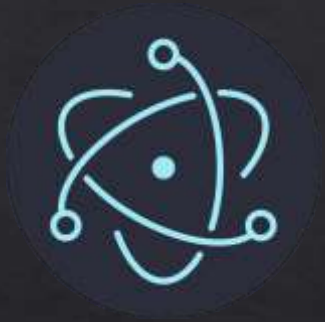


Based OS + Runtime

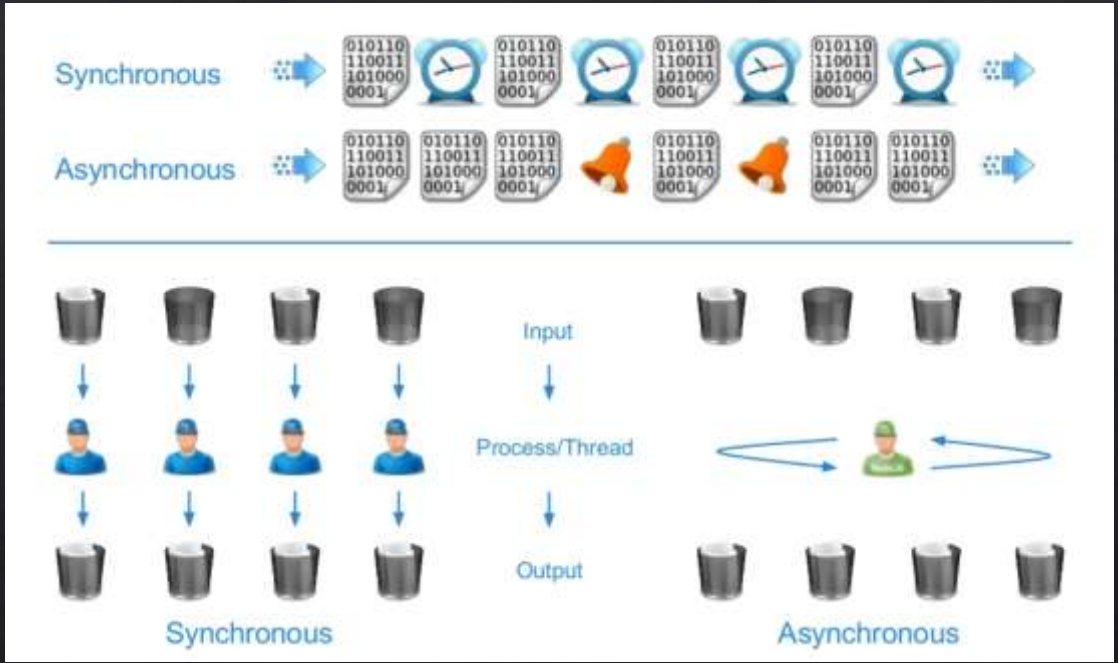
Application

NodeJS

- JavaScript
- Opensource
- Cross Platform Environment



Nodejs uses asynchronous programming



index.js

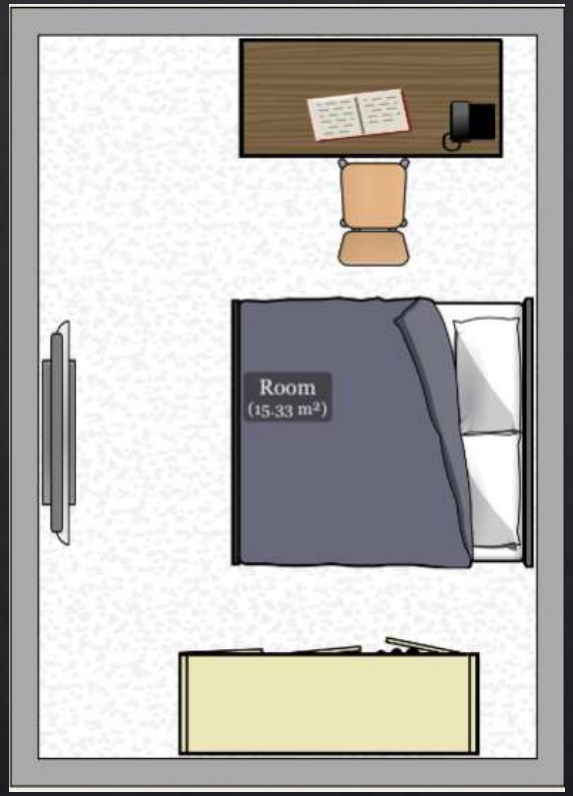

```
var http = require('http'); //create a server object:

const port = process.env.PORT || 8080;

http.createServer(function (req, res) {

  res.write('Hello World!'); //write a response to the client

  res.end(); //end the response

}).listen(port); //the server object listens on port 8080
```


Antec


Room

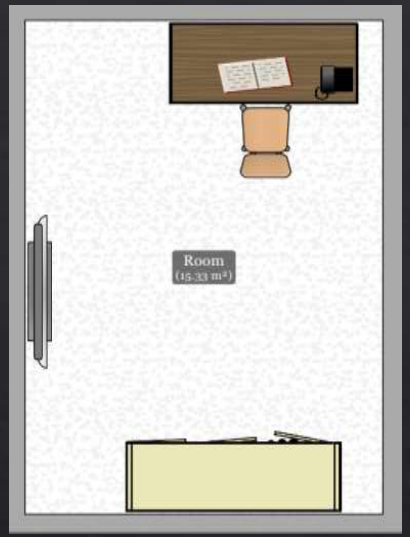
Hello World

1. index.js
2. Dockerfile

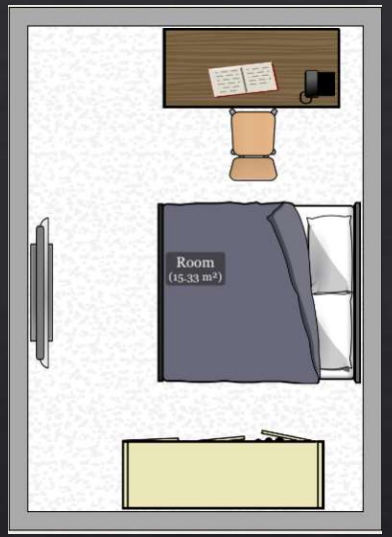


Hello World

Alpine Linux



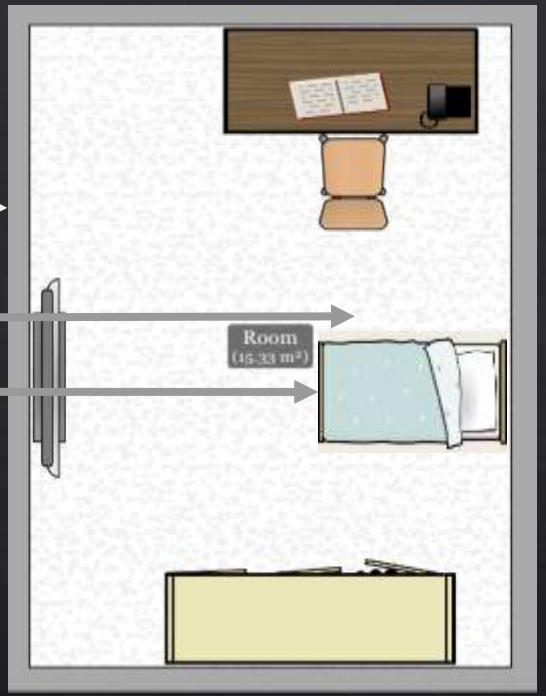
node:12-slim



Hello World

Dockerfile

```
FROM node:12-slim

WORKDIR /usr/src/app

COPY . ./

CMD [ "node", "index.js" ]
```

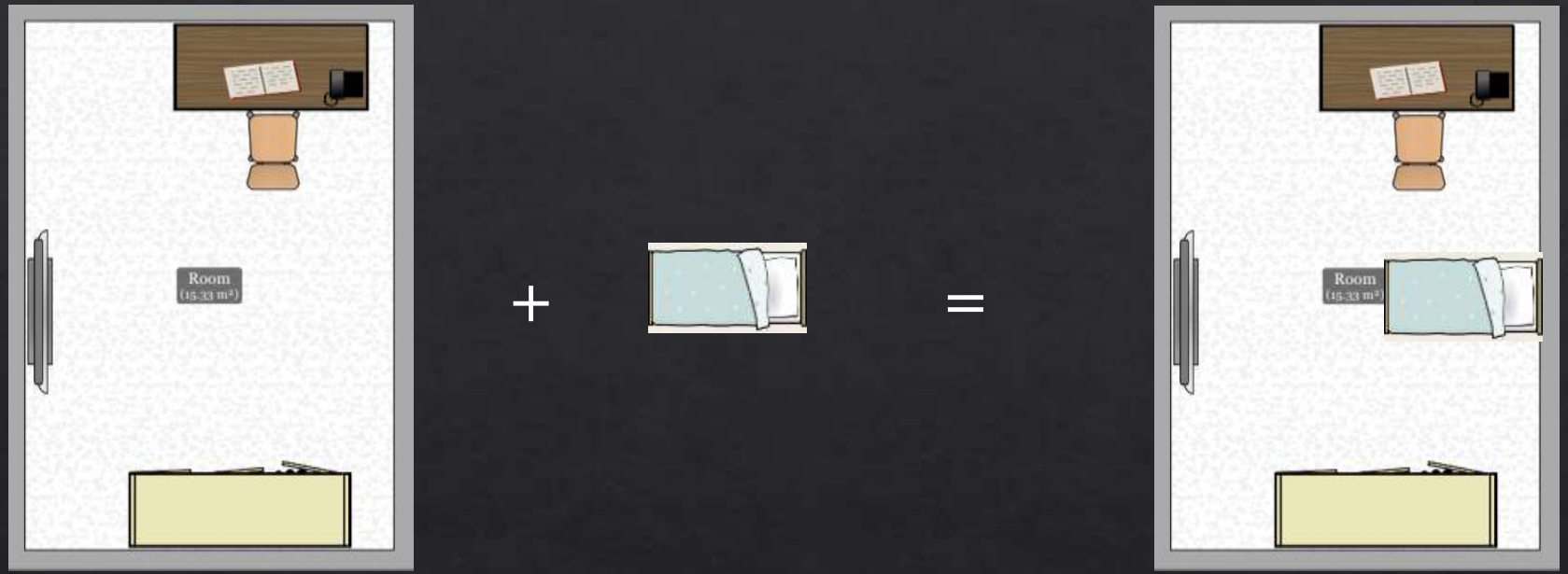


node:12-slim

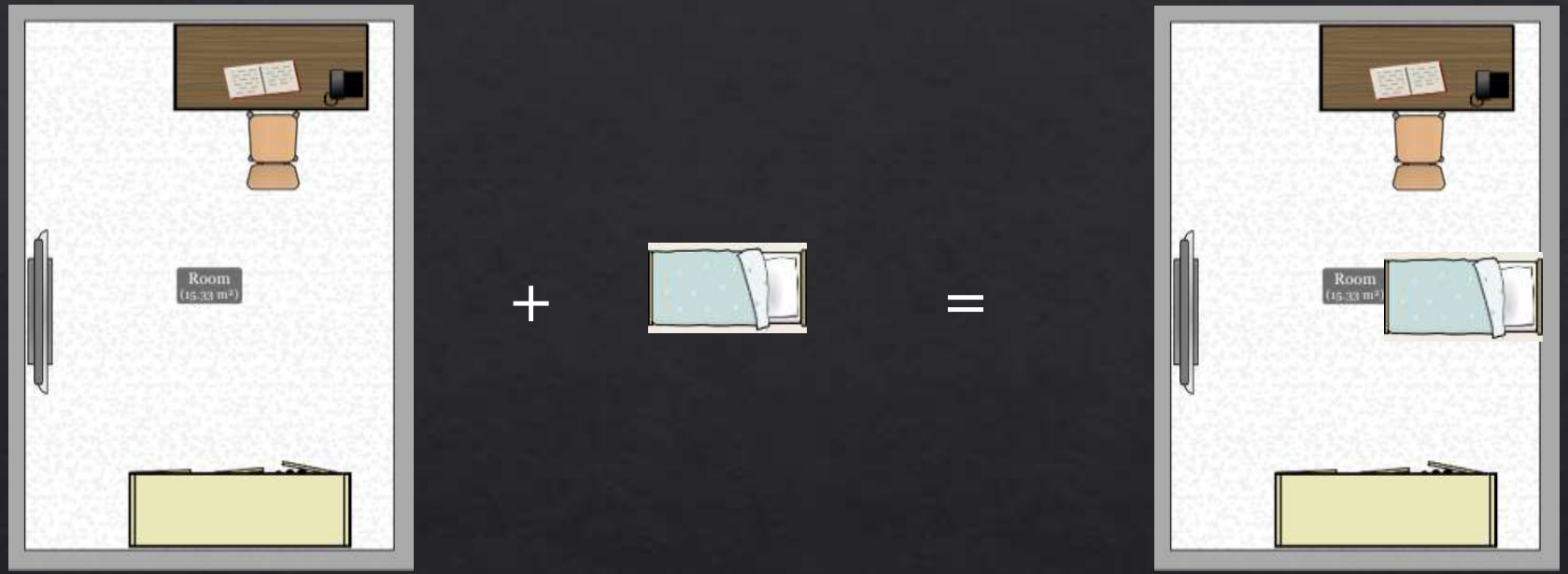
Google Cloud

- Install Google Cloud SDK https://cloud.google.com/sdk/docs/downloads-interactive
- Login by using your google id account
  - `gcloud auth login`
- Enable google cloud trial
- Try https://cloud.google.com/run/docs/quickstarts/build-and-deploy
- Cloudrun can be used for deploying a container.

Demo




```
gcloud builds submit --tag gcr.io/wespace-project/helloworld
```




```
gcloud run deploy --image gcr.io/PROJECT-ID/helloworld --
platform managed
```

Serverless

Key takeaways

- We try to pool all the resources into one endpoint, to utilize it more effectively.
- Container is a portable application.
- Kubernetes is a container management tool.
- We need container registry to store container image.

Thank you


IoT
cloudserve
@TEIN

CHULA ENGINEERING

GIST


NECTEC


UniNet

UNIVERSITI
MALAYA

AsiaConnect

TEIN