



University of
CONTOSO

MSA Phase 2

University of Contoso Student Portal

James Li

About myself

Mechatronics Engineering (R&D) @ ANU
Computer Vision and Robotics

Software Engineering @ UoA



Reactive controller design for
autonomous robot exploration

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About myself

Have been doing web-ish stuff for a while (2008-)

User scripts (Greasemonkey)

Web “apps” (Dynamic tables, public transport APIs...)

Most recently: Robogals

Sysadmin + web design/dev

Website (Oct 2014)

Everything written from scratch over about a month

NXTBUS API Scrapping

Departures

Stop ID: (Find IDs [here](#))

Time: Now 24/11/2015 UTC only. (See note below if fields unclear.)

Service No.	Destination	Sch. Depart.	Exp./Act. Depart.		
10	Majura Busn. Pk Loop	2015-11-24T08:53:00.000Z	2015-11-24T08:53:16.000Z	On Time	[BR]
4	City Bus Station	2015-11-24T08:49:00.000Z	2015-11-24T08:53:26.000Z	Late	[LF][BR]
313	Fraser West Terminus	2015-11-24T08:59:00.000Z	2015-11-24T08:57:38.000Z	Early	[LF][BR]
9	City Bus Station	2015-11-24T08:58:00.000Z	2015-11-24T08:57:44.000Z	Early	[LF][BR]
200	Gungahlin Market Place	2015-11-24T09:01:00.000Z	2015-11-24T08:59:30.000Z	Early	[LF][BR]
3	Cohen Street Bus Stn	2015-11-24T09:00:00.000Z	2015-11-24T09:03:16.000Z	Sluggish	[LF][BR]
5	City Bus Station	2015-11-24T09:22:00.000Z	2015-11-24T09:24:36.000Z	Sluggish	[LF][BR]
313	Fraser West Terminus	2015-11-24T09:27:00.000Z	2015-11-24T09:27:00.000Z	Scheduled	[LF][BR]

Robogals

Who are we What we do Where we work Be part of it Our partners

Robotics Workshops

Discover what Robogals volunteers do in our global workshop programme

Robogals is an international, not-for-profit, student-run organisation that aims to increase female participation in Engineering, Science and Technology through fun and educational initiatives aimed at girls in primary and secondary school.

myRobogals

[Forgot your password?](#)

Scenario & Requirements

University of
CONTOSO

20 000+ students, geographically dispersed

Need student and course management services

Online enrolment platform for students

An application for all devices

Ready for future integration with university systems

Solution

University of Contoso Student Portal

Shortened URL: <http://uc.nya.nz>

Hosted at: <http://university-of-contoso.azurewebsites.net>

Day 1/2 – Backend

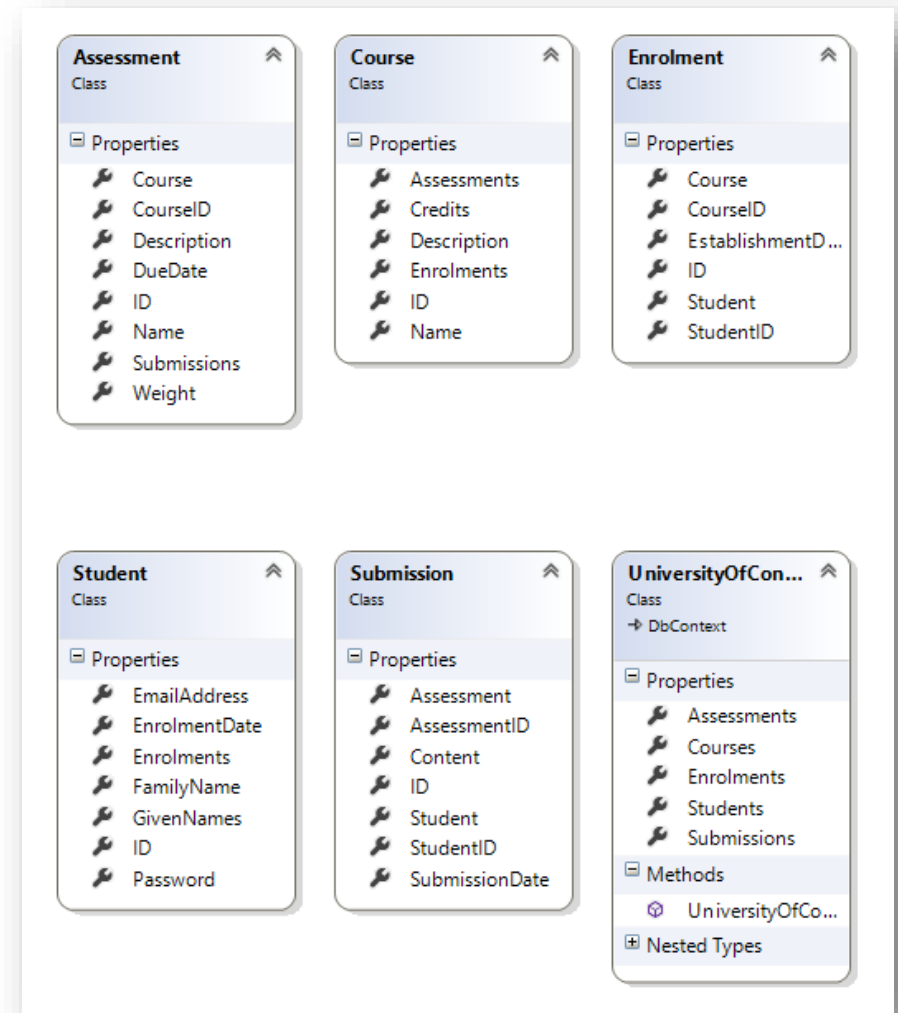
Learning about using ASP.NET

Tables with EF Code-First

ASP.NET Web API controllers + Basic HTTP Auth

Swagger

Project hosted on GitHub





Submission.cs

UniversityOfContoso

UniversityOfContoso.Models.Submission

ID

```
using Newtonsoft.Json;
using System;
using System.Collections.Generic;
using System.ComponentModel.DataAnnotations;
using System.ComponentModel.DataAnnotations.Schema;
using System.Linq;
using System.Web;

namespace UniversityOfContoso.Models
{
    public class Submission
    {
        public int ID { get; set; }
        [ForeignKey("Assessment")]
        public int AssessmentID { get; set; }
        [ForeignKey("Student")]
        public int StudentID { get; set; }
        public string Content { get; set; }
        public DateTime SubmissionDate { get; } = DateTime.UtcNow;

        [JsonIgnore]
        public virtual Assessment Assessment { get; set; }
        [JsonIgnore]
        public virtual Student Student { get; set; }
    }
}
```

90 %

[Explore](#)

UniversityOfContoso

Assessments

[Show/Hide](#) | [List Operations](#) | [Expand Operations](#)

Courses

[Show/Hide](#) | [List Operations](#) | [Expand Operations](#)

Enrolments

[Show/Hide](#) | [List Operations](#) | [Expand Operations](#)[GET](#) /api/Enrolments/CourseIds[GET](#) /api/Enrolments[POST](#) /api/Enrolments[DELETE](#) /api/Enrolments/{id}[GET](#) /api/Enrolments/{id}

Students

[Show/Hide](#) | [List Operations](#) | [Expand Operations](#)

Submissions

[Show/Hide](#) | [List Operations](#) | [Expand Operations](#)

[BASE URL: , API VERSION: V1]

[VALID](#)

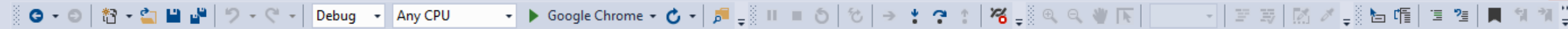
Day 2/3 – Frontend

TypeScript → JavaScript

LESS → CSS

jQuery, Application Insights,
and three other scripts (hashing and media queries)

Custom logic and responsive design



```
unicontoso.ts  X
UniversityOfContoso  {} <global>  _UCInstance
1  /// <reference path="typings/jquery/jquery.d.ts" />
2
3  // Gravatarjs
4  declare var gravatar: any;
5
6  // Enquire (media queries)
7  declare var enquire: any;
8
9  // MD5 hashing
10 declare var md5: any;
11
12
13 class UCPage...
14
15
16
17
18
19
20
21
22
23 class UCApi {
24     private static generateApiUrl(endpoint: string): string {
25         return "/api/" + endpoint;
26     }
27
28     public static callApi(endpoint: string, params?: any): JQueryXHR {
29         var params = params || {};
30
31         return $.ajax(UCApi.generateApiUrl(endpoint), params);
32     }
33
34     public static callApiWithAuth(endpoint: string, identity: UCIdentity, params?: any)
35         var params = params || {};
36
37         params = $.extend({}, params, {
38             beforeSend: function (xhr) {
39                 xhr.setRequestHeader("Authorization", "Basic " + btoa(identity.getUser(
40                 ));
41             });
42         });
43         return UCApi.callApi(endpoint, params);
44     }
45 }
46
47 class UCUtils...
```

(parameter) params: any

```
unicontoso.less  X
//=====
#courses-table {
    background: lighten(@colour-background, 10%);
    & > .col {
        padding: 0.8em;

        & > .row {
            .col {
                padding: 0.8em;
                vertical-align: middle;
                overflow: hidden;
                text-overflow: ellipsis;

                & .code {
                    font-weight: bold;
                }
            }
        }

        & > .row.course {
            & :nth-child(odd) {
                background: rgba(0,0,0,0.05);
            }
        }
    }
}

#course-info {
    background: lighten(@colour-background, 10%);
    & > .col {
        padding: 1em;
    }

    h2:first-child,
    h2:first-child,
    h3:first-child,
    h4:first-child {
        margin-top: 0.1em;
    }
}
```

University of **CONTOSO**

Enrolments

Reload Find/Add Courses

Course	Title	Unenrol	Info	Upload
CHEM110	Chemistry of the Living World	<input type="button" value="Unenrol"/>	<input type="button" value="Info"/>	<input type="button" value="Upload"/>
ECON201	Microeconomics	<input type="button" value="Unenrol"/>	<input type="button" value="Info"/>	<input type="button" value="Upload"/>
ECON211	Macroeconomics	<input type="button" value="Unenrol"/>	<input type="button" value="Info"/>	<input type="button" value="Upload"/>

Elements Network Sources Timeline Profiles Resources Audits Console

View: [Icons] Preserve log [x] Disable cache [x] No throttling [v]

Filter [] Hide data URLs [x] All XHR JS CSS Img Media Font Doc WS Other

Name Path	Status Text	Type	Initiator	Size Content	Time Latency	Timeline - Start Time	25 min	33 min	4.2 min	5.0 min
enrolments.html /pages	200 OK	xhr	jquery.js:9664 Script	1.2 KB 1.6 KB	6 ms 6 ms					
enrolments.js?_=1448354326205 /Pages	200 OK	xhr	jquery.js:9664 Script	1.5 KB 2.2 KB	7 ms 6 ms					
Courses /api/Students/1	200 OK	xhr	jquery.js:9664 Script	1.8 KB 1.4 KB	36 ms 36 ms					
track dc.services.visualstudio.com/v2	200 OK	xhr	ai.0.js:1 Script	538 B 0 B	231 ms 230 ms					
track dc.services.visualstudio.com/v2	200 OK	xhr	Other	538 B 49 B	243 ms 242 ms					

32 requests | 139 KB transferred | Finish: 5.2 min | DOMContentLoaded: 281 ms | Load: 390 ms

UniversityOfContoso - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Debug Any CPU Google Chrome

unicontoso.ts index.html unicontoso.less assessments.ts assessments.html

```

<!DOCTYPE html>
<html class="large">
<!--<html class=""-->
<head>
  <meta charset="utf-8">
  <meta http-equiv="X-UA-Compatible" content="IE=edge">
  <meta name="viewport" content="width=device-width,initial-scale=1">

  <title>University of Contoso Student Portal</title>

  <link href="Static/css/normalize.css" rel="stylesheet" />
  <link href="Static/css/font-awesome.min.css" rel="stylesheet" />
  <link href="Static/css/unicontoso.css" rel="stylesheet" />

  <script>
    var appInsights = window.appInsights || function (config) {
      function r(config) { t[config] = function () { var i = arguments; t.queue.push(function () {
        instrumentationKey: "0a994ef9-fbb6-483a-af47-6512f8f4b0b9"
      });
    };
    window.appInsights = appInsights;
    appInsights.trackPageView();
  }</script>
  <script src="https://ajax.googleapis.com/ajax/libs/jquery/1.11.3/jquery.min.js"></script>
  <script src="Static/js/unicontoso.js"></script>
</head>
<body class="">
  <div id="header"></div>
  <div id="tray"><span class="text"></span></div>
  <div id="menu">
    <ul>
      <li class="profile">
        <div class="link"><div id="gravatar" class="image" data-image="//www.gravatar.com/avatar">
          <div class="info">
            <span class="name">John Doe</span>
          </div>
        </li>
      <li class="user">
        <div class="row">
          <div class="col">
            <div class="button-transparent id="logout"><i class="fa fa-sign-out"></i>Log ou
          </div>
        </div>
      </li>
      <li><a href="#" data-href="enrolments.html" class="menu-item"><i class="fa fa-list-alt"></i></li>
      <li><a href="#" data-href="courses.html" class="menu-item"><i class="fa fa-graduation-cap"></i></li>
      <li><a href="#" data-href="assessments.html" class="menu-item"><i class="fa fa-inbox"></i></li>
      <li><a href="#" data-href="submissions.html" class="menu-item"><i class="fa fa-upload"></i></li>
    </ul>
  </div>
  <div id="menu-underlay"></div>
  <div id="stage"></div>
  <div id="overlay"></div>
  
```

Task List Command Window Output Find Results 1 Package Manager Console Azure App Service Activity Error List Find and Repla

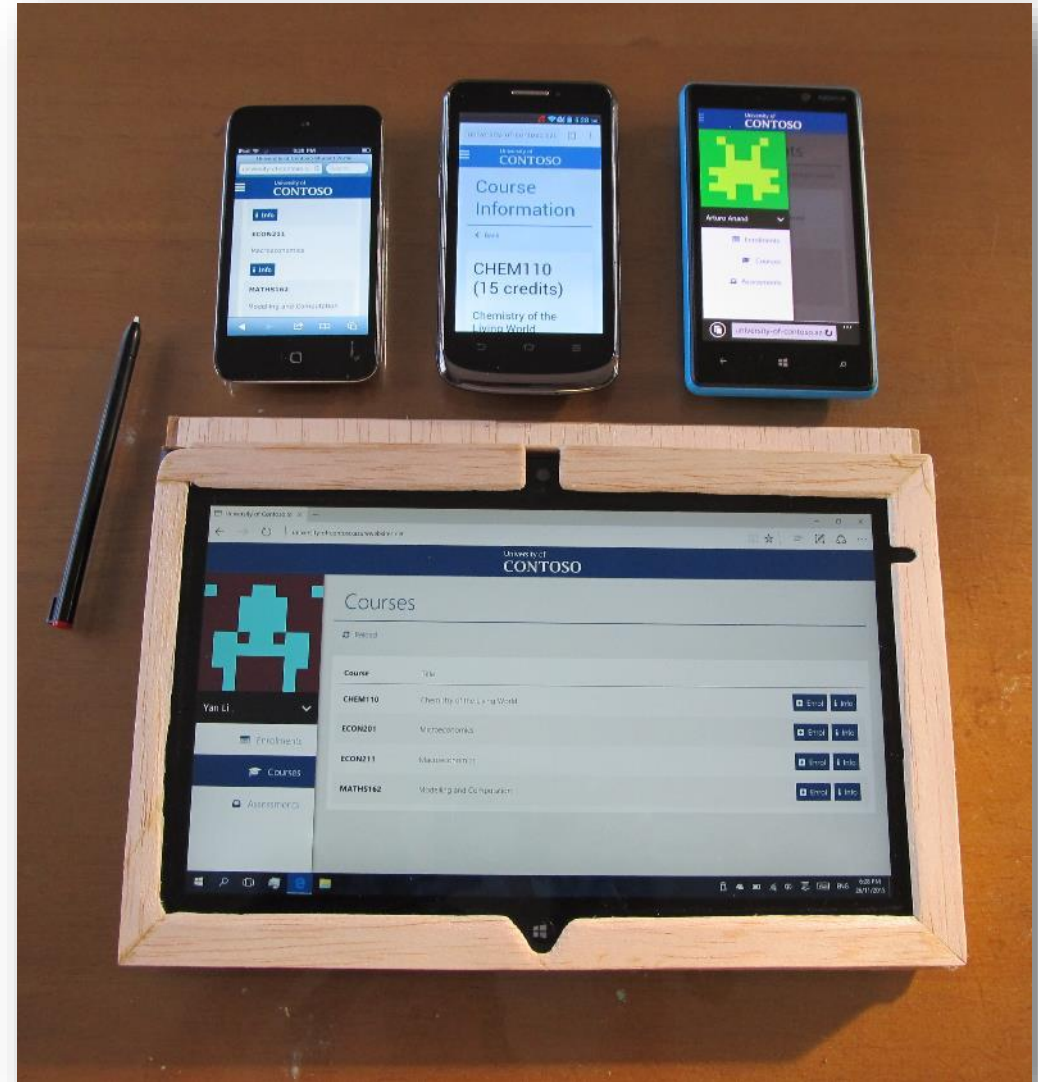
Day 4 – Finishing up

Final tweaks and bits of code

Publishing onto Azure

Making a ManifoldJS app

Testing



Implemented features

REQUIRED

- Published on Azure Web Apps
- Allow students to manage courses
- Show relevant course information
- Responsive Design
- Application Insights

ADDITIONAL

- Let students submit work
- Make mobile app with ManifoldJS
- Source controlled via. GitHub

Questions?

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