

Applied Learning in Computer Science

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The Seven Top Skills Google Now Looks For in Graduates

- Being a good coach
- Communicating and listening well
- Possessing insights into others (social awareness)
- Empathy and support toward colleagues
- Critical thinking
- Problem solving
- Connecting complex ideas

The surprising thing Google learned about its employees — and what it means for today's students



The Washington Post

Dec. 20, 2017



HVTECHFEST

2019

What is Applied Learning?

Applied Learning refers to an educational approach whereby students learn by engaging in direct application of skills, theories and models. Students apply knowledge and skills gained from traditional classroom learning to hands-on and/or real-world settings, creative projects or independent or directed research, and in turn apply what is gained from the applied experience to academic learning.



Applied Learning at SUNY



SUNY enrolled more than 185,000 students in 32,000 approved applied learning courses in the 2016-17 academic year.

40% of all SUNY programs currently require approved applied learning experiences.

suny.edu/applied-learning

Applied learning opportunities at SUNY include:



- Cooperative Education
- Co-op & Clinical Placements
- Internships
- Practicum



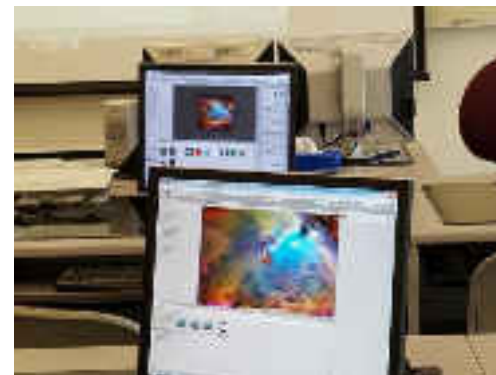
- Service-learning
- Community service
- Civic Engagement
- Volunteerism



- Research
- Entrepreneurship
- Field Study
- Experiences Abroad

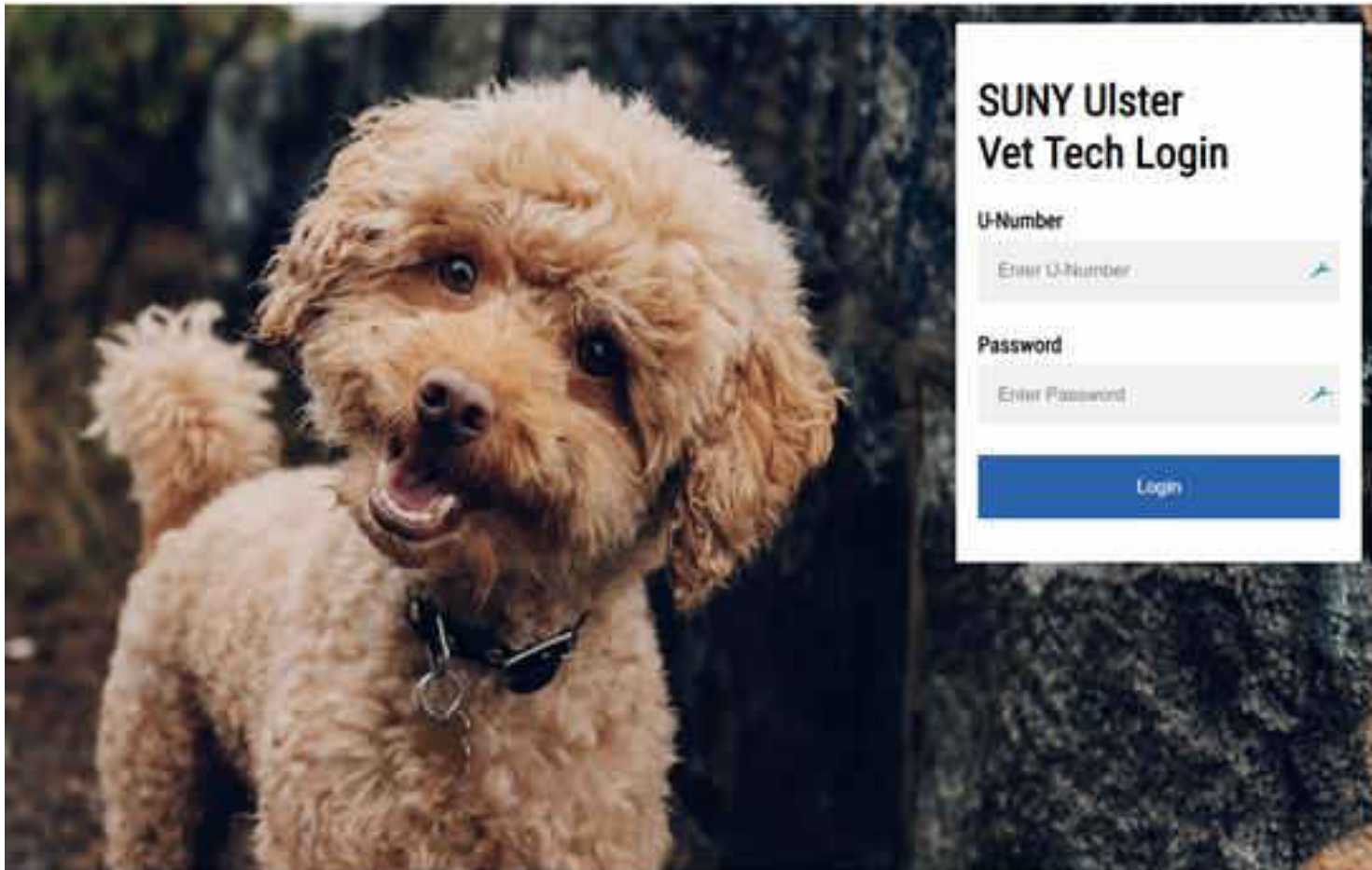
Applied Learning at SUNY Ulster Computer Science

- Students work in teams to develop software for a real customer on campus such as:
 - Graphic Design Program
 - Veterinary Technician Program
 - Campus Academic Success Center
- Projects may span across multiple years with new student teams picking up a project from a previous team
- Customers pitch their project ideas to the students
- Students form teams and practice Agile methodologies
- Students learn to apply **both** technical and soft skills



Project Ellie

Home page



Teams

Spring 2018:

- Salil Biswas
- Kyle Bittner
- Meldies Estrella
- Emmett Lacey
- Catherine Rumble
- Timothy Whitbeck

Spring 2019:

- Leonard Carcaramo
- Dominic Cerchia
- Eryk Cole



Initial Storyboard

Before



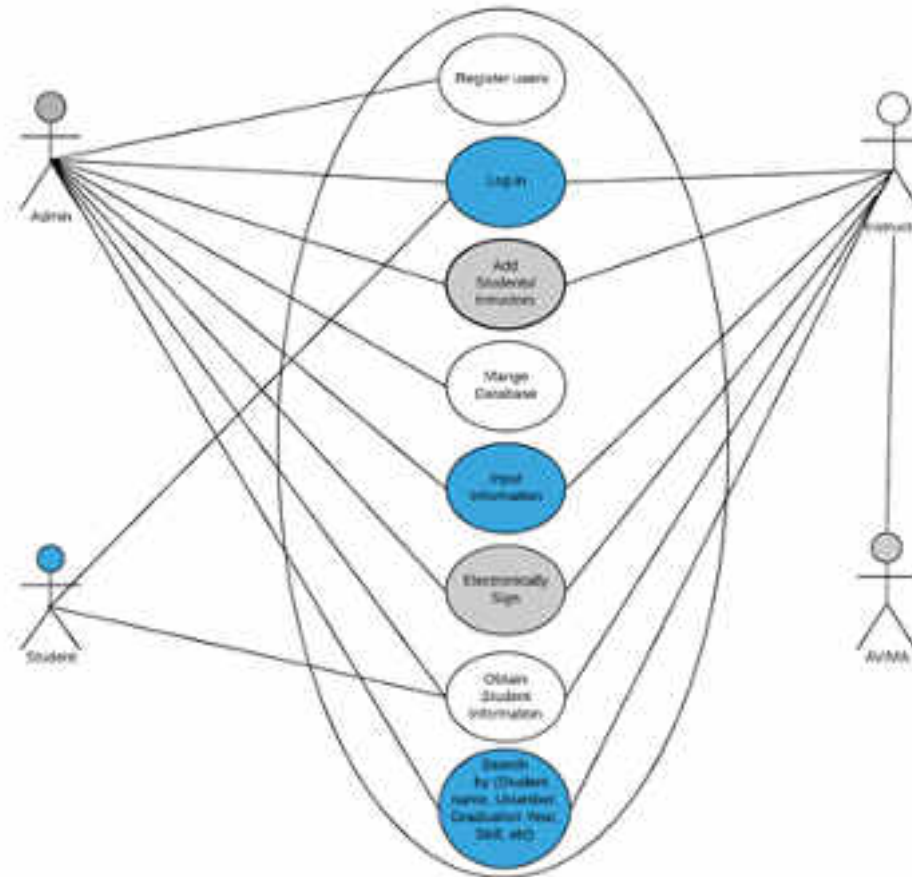
After



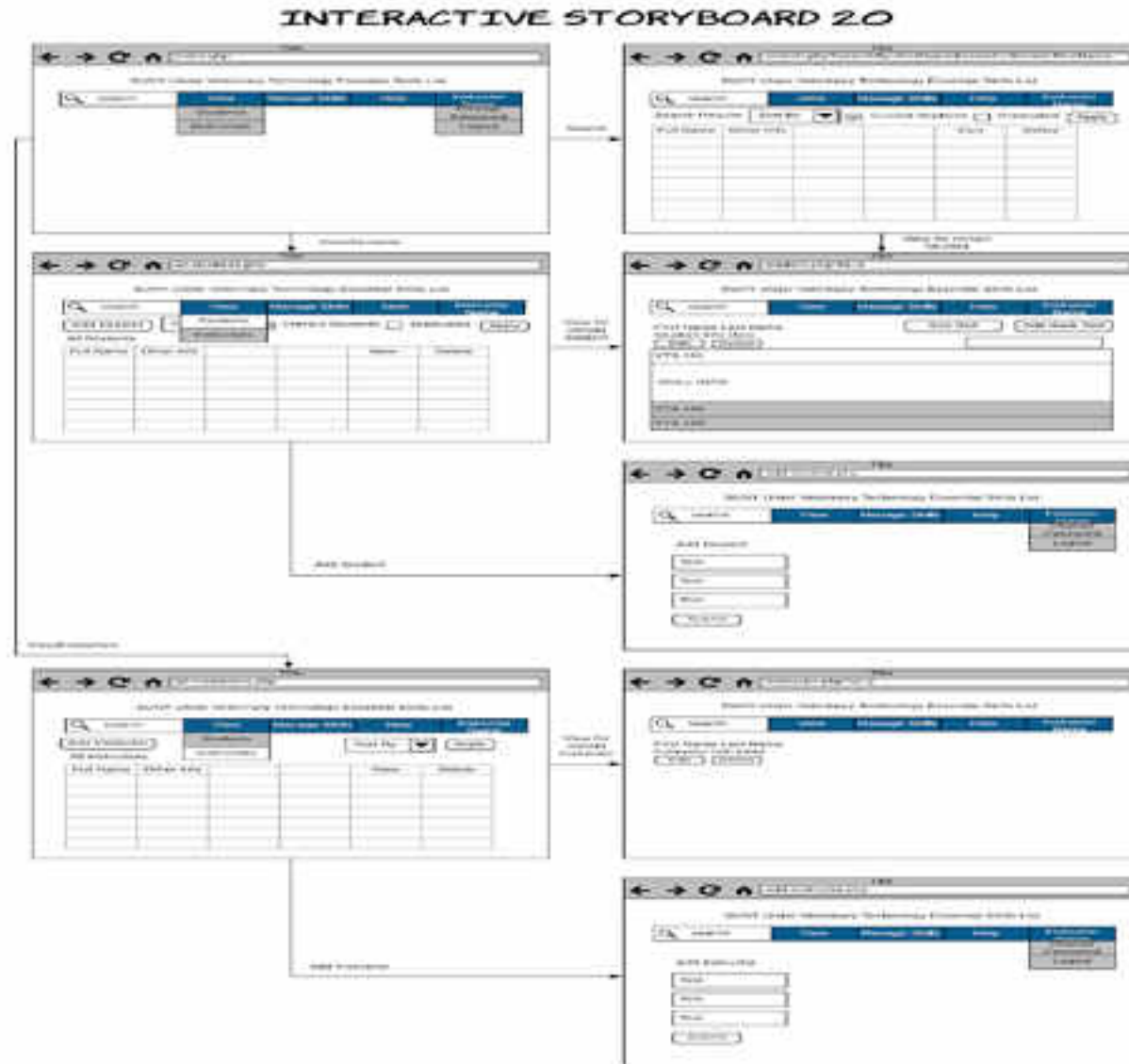
UML Use Case Diagram

Use Case Diagram

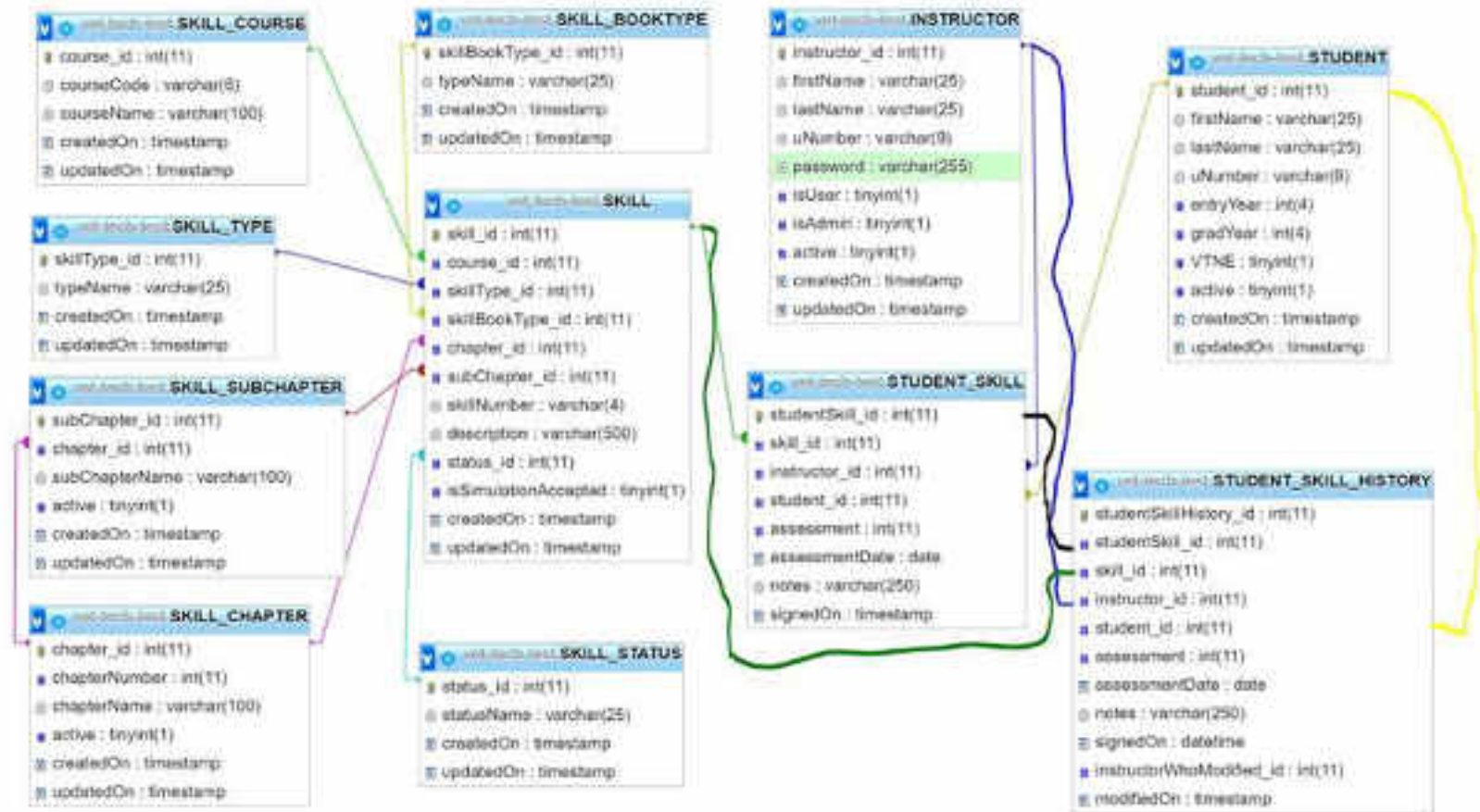
Team Elite | April 8, 2018



User Interface Storyboard



Database Diagram



Final Reports

Technical Report

- High Level Requirements
- High Level Storyboard
- Design
- User Interface Storyboard
- Use Case Diagram
- Activity Diagram
- Class Diagram
- Sequence Diagram
- Deployment Diagram
- Test Plans
- User Documentation
- Future Enhancements

Team Retrospective

- What worked?
- What didn't work?
- What would you do the same?
- What would you do differently?
- What Resources did you have or were missing?
- What Roles Did each team member take? Was it effective?
- Team participation Memo sent only to course Instructors



Theory and Practice of Object-Oriented Programming



Freeman Eckles – Team Leader, iOS developer
Laura Gibbons – Android developer
Ethan Smith – Android Developer
Tracy Sutton – Diagram Drafter
Andrew Witte – iOS Developer



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Overview:

SUNYUlsterSupports.me will be a new section for the SUNY Ulster website. There will be a **corresponding app** that will:

- Act as an aid to students
- Showcase the College's support services and resources
- Alert students to campus events
- Provide an interactive map of campus

Why Make an App?

- According to Deloitte, the average college-student-age American checks their phone more than seventy times per day and 26% of those in the 18-24 age range said they look at their phones immediately upon waking up.
- According to Pew research, 94% of community college students own a smartphone, only 67% own a desktop computer and 70% own a laptop.
- Many colleges have created mobile apps that mimic their website. We propose a mobile app that works to help students find places, services, and resources that will help them succeed.



Goals:

- Raise awareness of events, resources, services, and deadlines on campus
- Help students build skills for conducting the business of being a student by setting a habit of checking the app
- Raise engagement by immersing students in the campus community
- Improving access to critical information and removing barriers to information
- Improving retention by helping students feel more in control and more connected to the campus

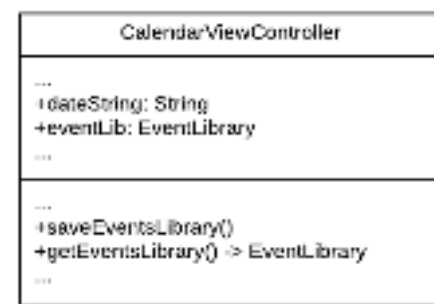
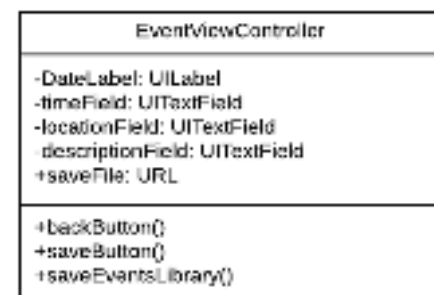
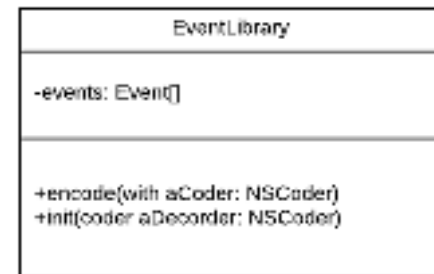
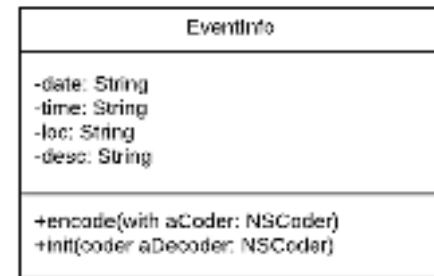
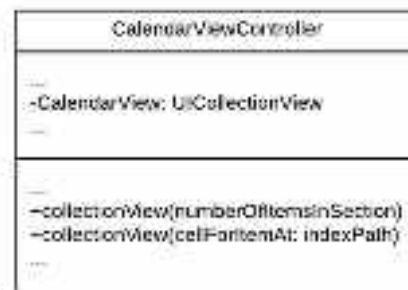
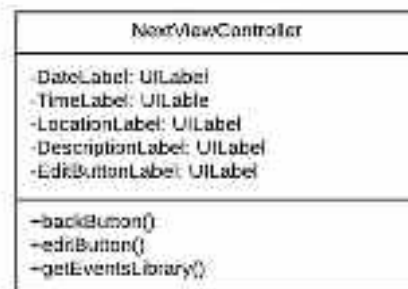
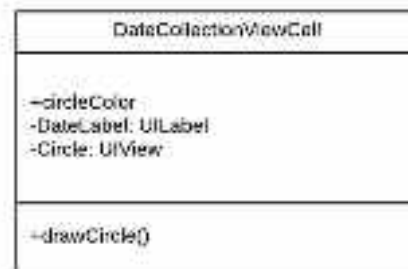
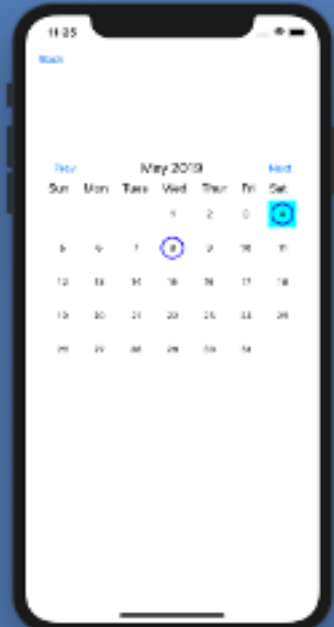
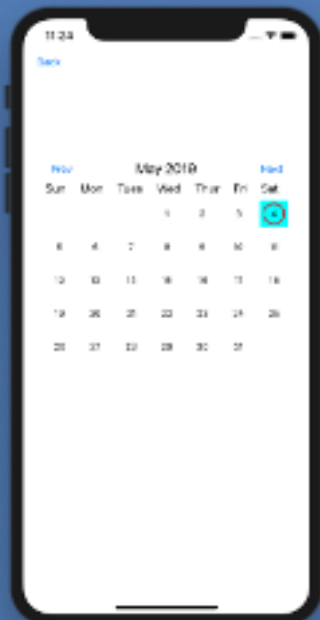


Team Formation and First Steps

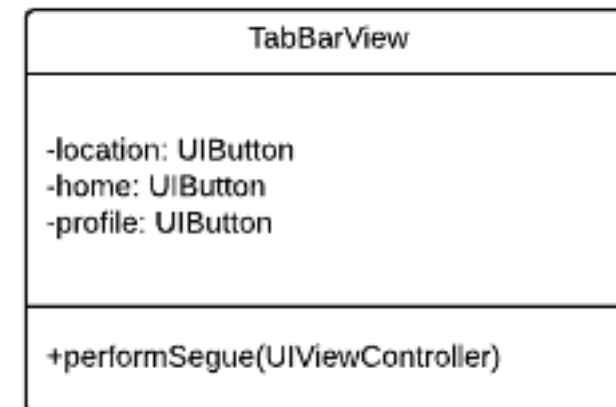
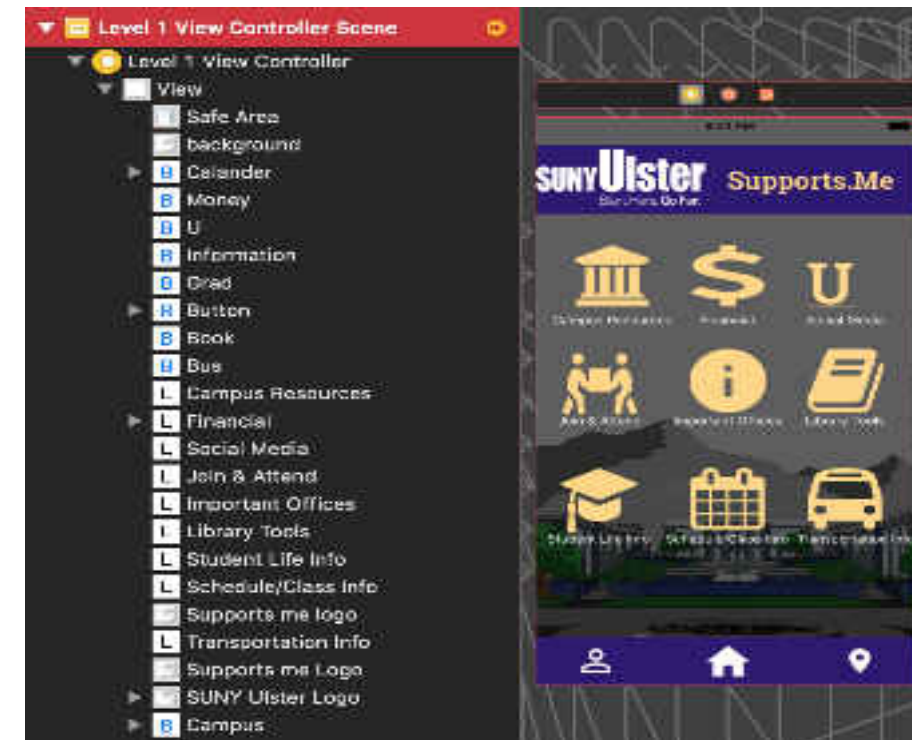
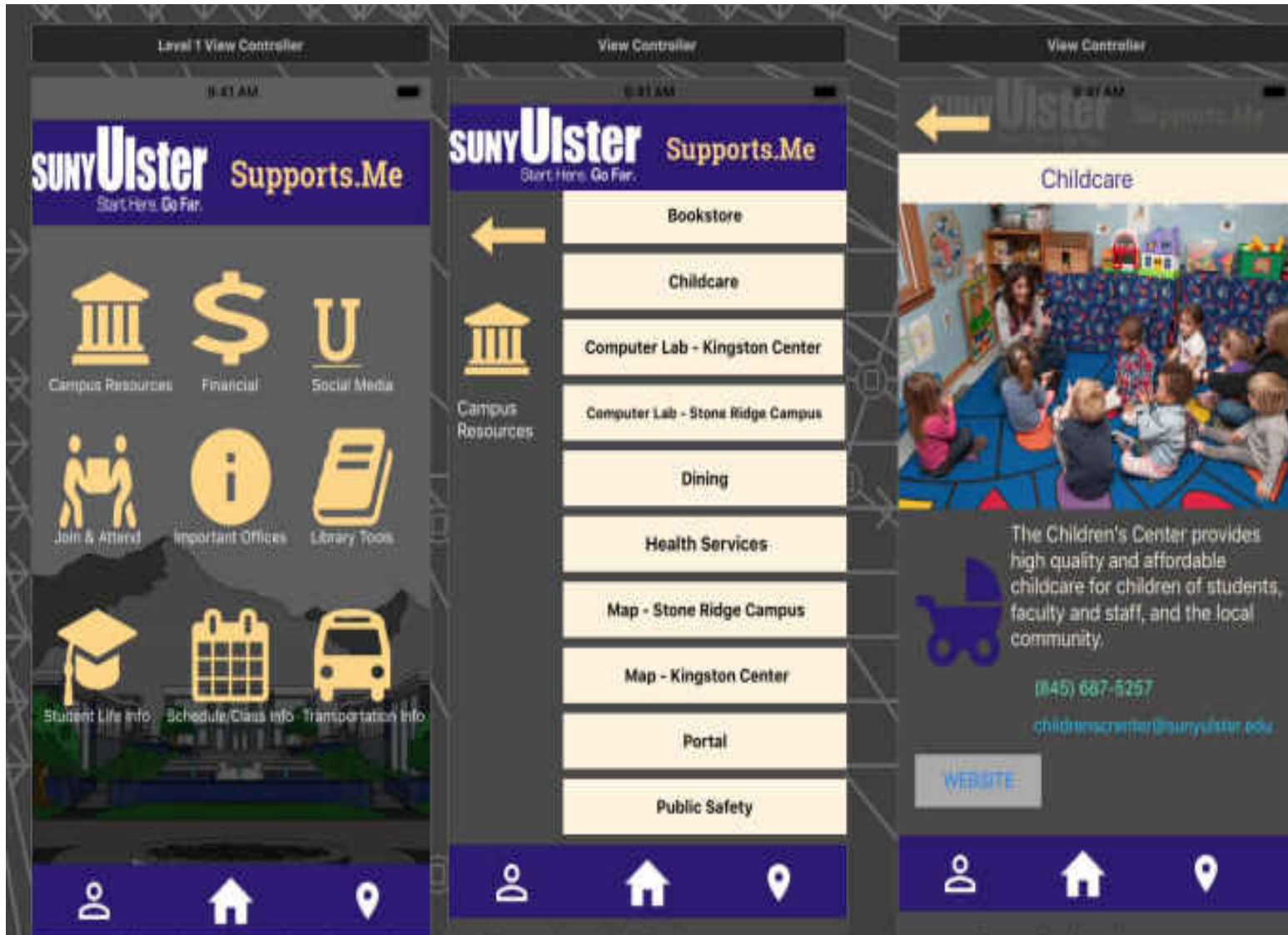
- Introduce ourselves and give background/experience, choose which project to work on
- Set up communication system, filesharing, share emails, get access to web tools
- Break down original specification into the major features, delegate tasks to teammates
- Brainstorm implementation of features, discuss difficulty of implementation and meeting deadlines
- Break down features, translate to code, look for existing tools, research implementation
- Schedule regular weekly team meetings, shareholder meetings for feedback



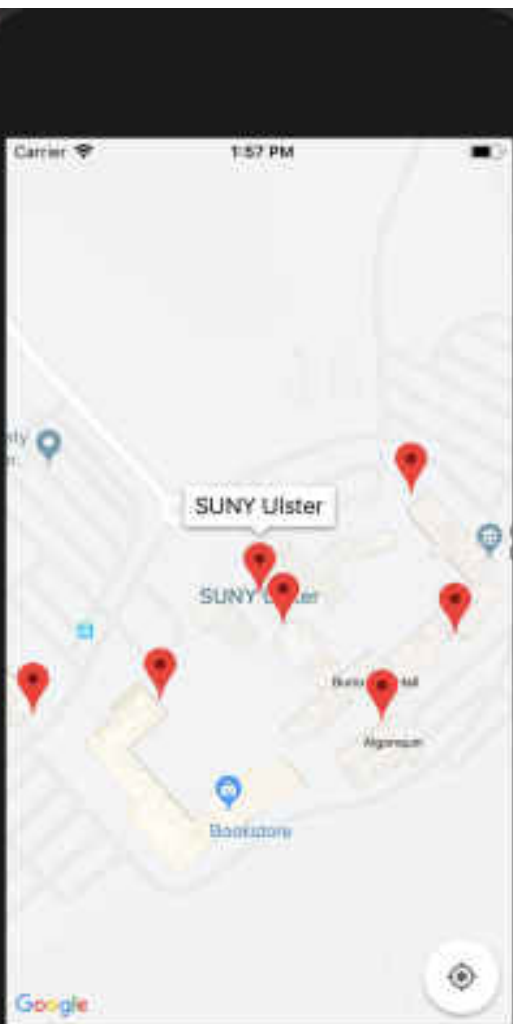
Feature Overview: iOS Calendar



Feature overview: iOS UI



Feature overview: iOS Map



```
14 class GoogleMap: UIViewController {
15
16     override func loadView() {
17         // Create a GMSCameraPosition that tells the map to display the
18         // coordinate of Suny Ulster
19         let camera = GMSCameraPosition.camera(withLatitude: 41.8515, longitude: -74.1290,
20                                               zoom: 17.0)
21         let mapView = GMSMapView.map(withFrame: CGRect.zero, camera: camera)
22         mapView.setMinZoom(10, maxZoom: 20)
23         mapView.settings.myLocationButton = true
24         view = mapView
25
26
27
28
29         // Creates markers for each building at Suny Ulster
30         let Ulstermarker = GMSMarker()
31         Ulstermarker.position = CLLocationCoordinate2D(latitude: 41.8515, longitude:
32             -74.1290)
33         Ulstermarker.title = "SUNY Ulster"
34         Ulstermarker.map = mapView
35
36         let hmarker = GMSMarker()
37         hmarker.position = CLLocationCoordinate2D(latitude: 41.8521, longitude: -74.1278)
38         hmarker.title = "Hardenbergh Building"
39         hmarker.map = mapView
40
41         let bmarker = GMSMarker()
42         bmarker.position = CLLocationCoordinate2D(latitude: 41.85126, longitude: -74.12745)
```

GoogleMap

myLocationButton: Button

-UlsterMarker: Marker

-hmarker: Marker

-bmarker: Marker

-amarker: Marker

-vmarker: Marker

-dmarker: Marker

-smarker: Marker

-GMSMarker()

+loadMap()

Feature overview: Android Calendar



```
package com.example.calendar107;

import androidx.appcompat.app.AppCompatActivity;

public class CalendarMain extends AppCompatActivity {

    private static final String TAG = "Main Activity";

    private TextView theDate;

    private Button btnGoCalendar;

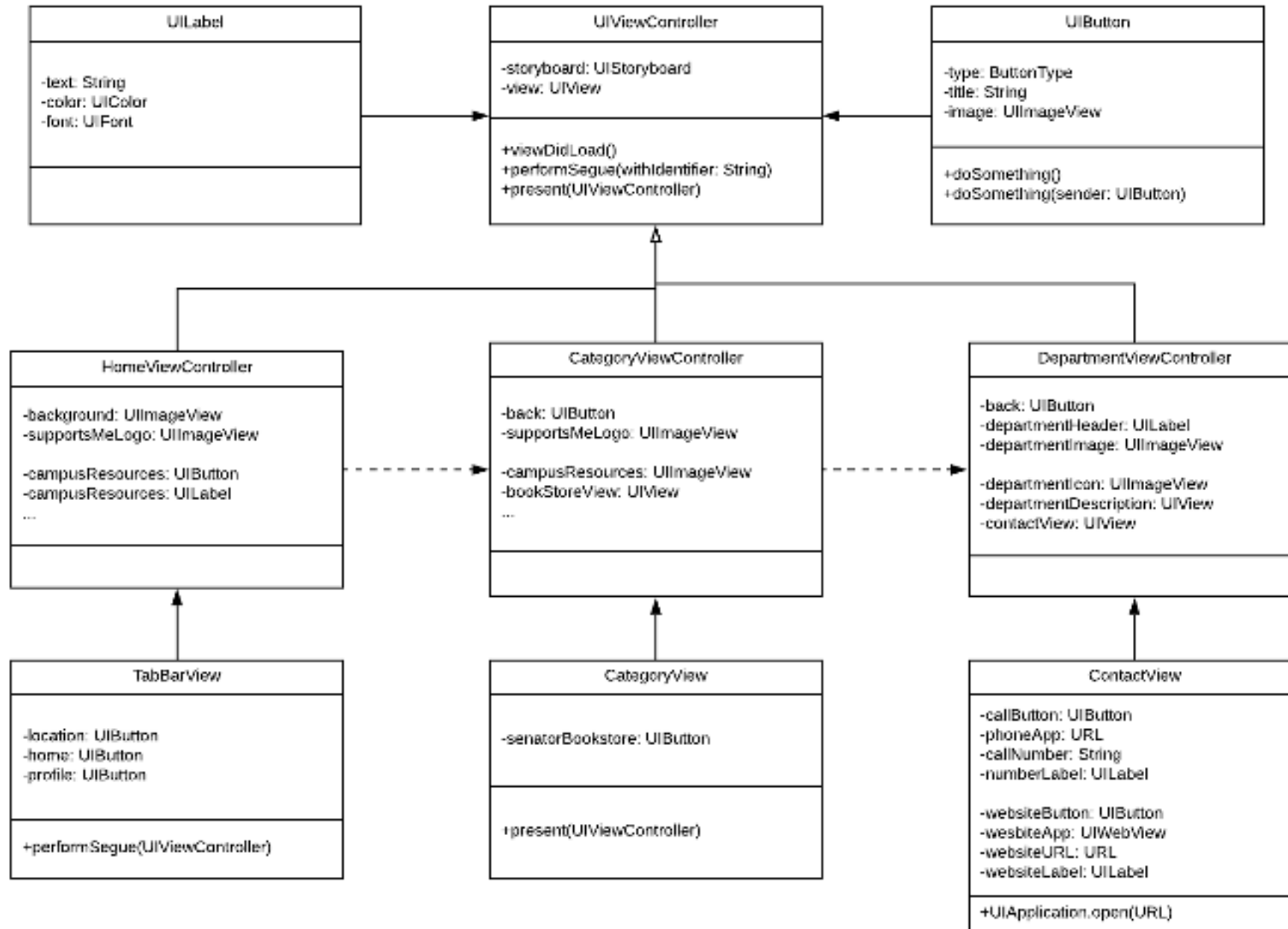
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        theDate = (TextView) findViewById(R.id.date);
        btnGoCalendar = (Button) findViewById(R.id.btnGoCalendar);

        Intent incomingIntent = getIntent();
        String date = incomingIntent.getStringExtra("date");
        theDate.setText(date);

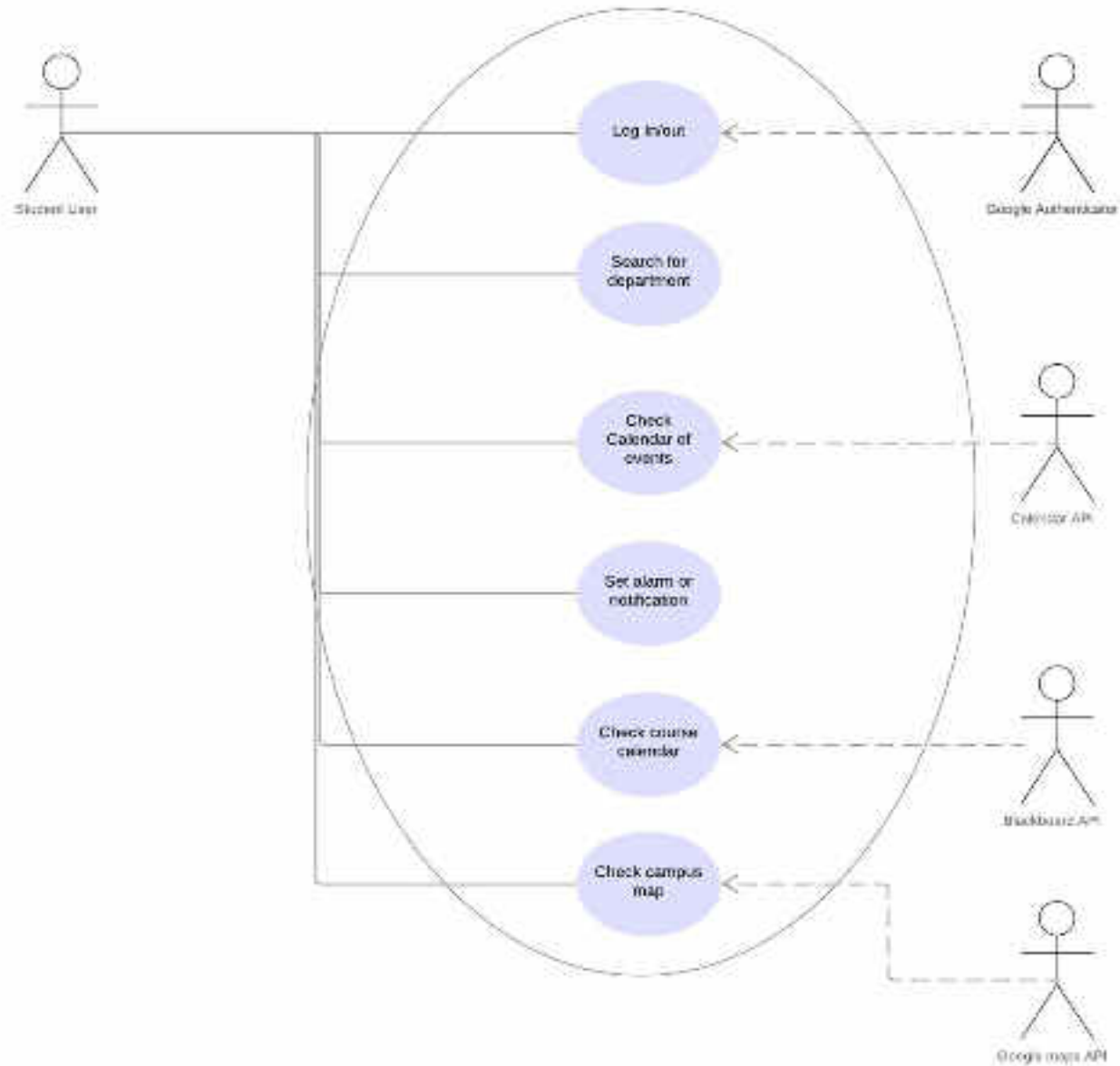
        btnGoCalendar.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(getApplicationContext(), CalendarActivity.class);
                startActivity(intent);
            }
        });
    }
}
```



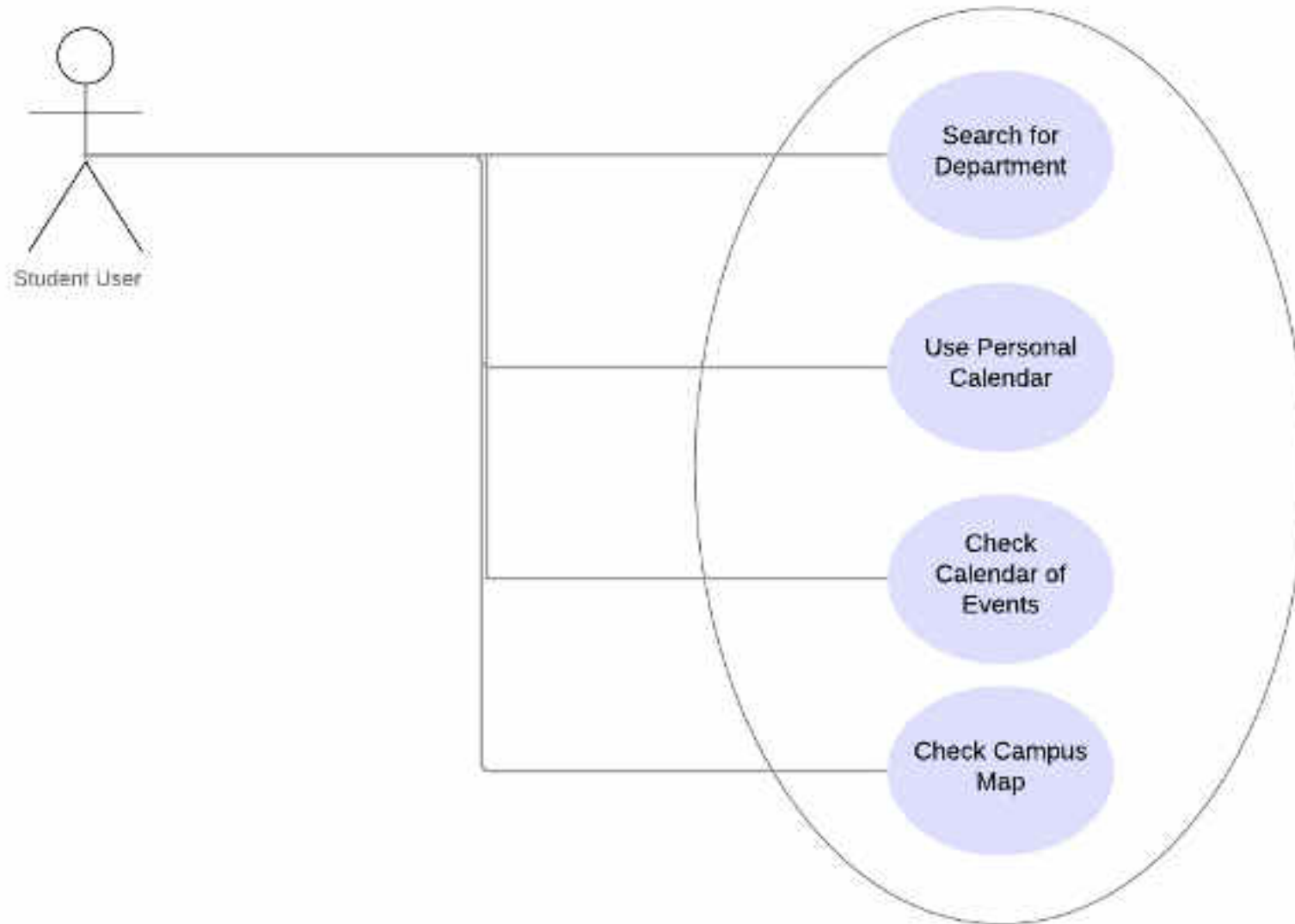
iOS Class Diagram



PLANNED USE CASE DIAGRAM



ACTUAL USE CASE



Future Enhancements

Future Features:

- RSS feeds for social media
- Push notifications, alarms
- Request a tutor
- Daily planner
- Rave alerts
- Better indoor maps

Current Feature Improvements:

- Smooth animations, page transitions
- Use conventional iCal file system
- Dynamic ordering of lists, icons
- More flexible map marker system
- Link with other apps
- Dropdowns on iOS
- Swipe gestures

Suggestions for Additional Features

- Faculty info/directory
- Search functionality
- General help section
- Feedback section



Roles and Retrospectives:

Freeman Eckles - Team Leader, Secondary iOS Developer

What worked?

Note taking, scheduling
Executive decisions

What would I do the same?

Commitment and accountability
Regular (daily) updates

Resources used?

Mac In Cloud
Moqups

What didn't?

Distance collaboration
Correspondence

What would I do differently?

Manage expectations and time better
More meetings with
stakeholders/designers

Resources needed?

Scrum planning service
Testflight



Class Assignments

Status Reports

Daily progress updates

What did we just accomplish?

What we will accomplish next?

Discuss any open issues, bugs, etc.

Code Reviews

Review, comment, and rate code

Constructive feedback to teammates

Stay up to date with team progress

Accountability within team

Team Review

Would I work with this person
again?

What did this person do well?

What did they not do well?

How did they work with the team?



My Thoughts

Workplace Experience

Practice in AGILE methodology
Manage all other courses, life, work, etc.
Deadlines, deliverables, writeups, reviews, etc.

Fully Fledged Project

Apply all information learned up to this point
Apply information from lectures in real time
Not just a one-off graded assignment

Teamwork

Cross-platform, distance collaboration
Learn what goes into teamwork
Learn value of communication



Issues and Challenges

Transitioning from a student team project to a production level product:

- Hosting
- Licensing
- Copyright Ownership
- Dev Ops
- Support
- User Training

Requires **commitment** from all stakeholders: Student, Faculty, Administration and of course the Customer!





SUNY Ulster
Start Here. Go Far.

Questions?



References

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 - <http://www.piedpiper.com/#technology>
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 - <http://conjoinedtriangles.com/>
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Technology Driven Economic Development

