

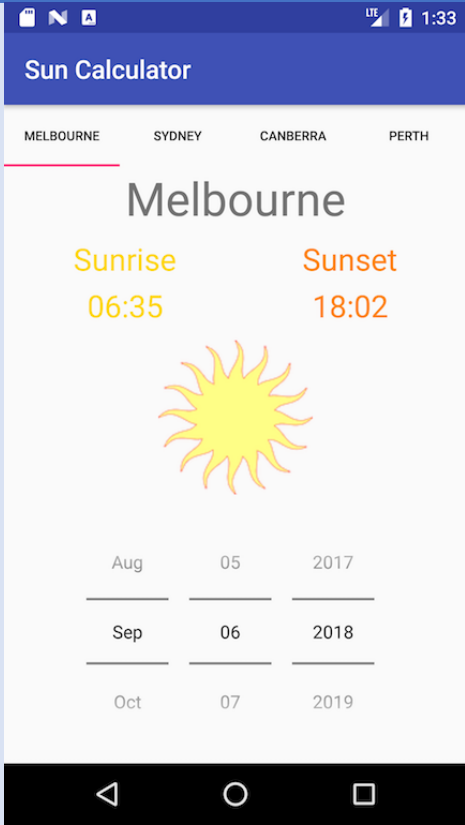
# Software Development for Mobile Devices

## Submission for Assignment A5.3C

### Refactoring the Sun

After refactoring the project based on the specification, the app is now having a tab bar on the top of the screen. A new fragment will be created when the user swipes to a new tab. For example, if the user swipes to Sydney Region, a new fragment will be created and calculate sun activities based on the geolocation.

### App Screen

Activity	Screen
MainActivity	 <p>The screenshot displays the 'Sun Calculator' app interface. At the top, there's a blue header with the title 'Sun Calculator'. Below the header, a tab bar shows four locations: MELBOURNE, SYDNEY, CANBERRA, and PERTH. The 'MELBOURNE' tab is currently selected, indicated by a red underline. The main content area shows the city name 'Melbourne' in a large font. Below it, the sunrise and sunset times are displayed: 'Sunrise 06:35' and 'Sunset 18:02'. A yellow sun icon is centered below the times. At the bottom, there's a date selector with three columns: month, day, and year. The current selection is 'Aug 05 2017'. Other visible options include 'Sep 06 2018' and 'Oct 07 2019'. The app is running on an Android device, as evidenced by the status bar at the top showing 'LTE' and the time '1:33', and the navigation bar at the bottom with back, home, and recent apps buttons.</p>

After refactoring, the MainActivity includes only the ViewPager, TabLayout and a FragmentAdapter to manipulate Fragments.

## MainActivity

```
public class MainActivity extends AppCompatActivity {

    FragmentAdapter adapterViewPager;
    private List<GeoLocation> australiaLocations = new ArrayList<>();
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        initData();
        ViewPager vpPager = (ViewPager) findViewById(R.id.pager);
        adapterViewPager = new FragmentAdapter(getSupportFragmentManager(),
australiaLocations);
        vpPager.setAdapter(adapterViewPager);
        vpPager.addOnPageChangeListener(new ViewPager.OnPageChangeListener() {

            // This method will be invoked when a new page becomes selected.
            @Override
            public void onPageSelected(int position) {
//                Toast.makeText(MainActivity.this,
//                "Selected page position: " + position,
Toast.LENGTH_SHORT).show();
            }

            // This method will be invoked when the current page is scrolled
            @Override
            public void onPageScrolled(int position, float positionOffset, int
positionOffsetPixels) {
                // Code goes here
            }

            // Called when the scroll state changes:
            // SCROLL_STATE_IDLE, SCROLL_STATE_DRAGGING, SCROLL_STATE_SETTLING
            @Override
            public void onPageScrollStateChanged(int state) {
                // Code goes here
            }
        });
        TabLayout tabLayout = findViewById(R.id.tabLayout);
        if (australiaLocations.size() > 4) {
            tabLayout.setTabMode(TabLayout.MODE_SCROLLABLE);
        } else {
            tabLayout.setTabMode(TabLayout.MODE_FIXED);
        }
        tabLayout.setupWithViewPager(vpPager);
    }

    public void addLocation(GeoLocation location) {
        this.australiaLocations.add(location);
    }

    private void initData() {
        TimeZone tz = TimeZone.getDefault();
        addLocation(new GeoLocation("Melbourne", -37.813629, 144.963058,tz));
        addLocation(new GeoLocation("Sydney", -33.868820, 151.209290,tz));
        addLocation(new GeoLocation("Canberra", -35.280937, 149.130005,tz));
    }
}
```

```
        addLocation(new GeoLocation("Perth", -31.950527, 115.860458,tz));
    }
}
```

## Fragment Adapter

```
public class FragmentAdapter extends FragmentStatePagerAdapter {
    List<GeoLocation> australiaLocations;

    public FragmentAdapter(FragmentManager fm, List<GeoLocation> australiaLocations) {
        super(fm);
        this.australiaLocations = australiaLocations;
    }

    @Override
    public Fragment getItem(int position) {
        return SunsetFragment.newInstance(australiaLocations.get(position));
    }

    @Override
    public int getCount() {
        return australiaLocations.size();
    }

    @Override
    public CharSequence getPageTitle(int position) {
        return australiaLocations.get(position).getLocationName();
    }
}
```

A SunsetFragment uses to setup a fragment based on the provided geolocation.

## SunsetFragment

```
public class SunsetFragment extends android.support.v4.app.Fragment {

    private GeoLocation geoLocation;

    private View rootView;

    public GeoLocation getGeoLocation() {
        return geoLocation;
    }

    public void setGeoLocation(GeoLocation geoLocation) {
        this.geoLocation = geoLocation;
    }

    public static SunsetFragment newInstance(GeoLocation geoLocation) {
        SunsetFragment fragmentFirst = new SunsetFragment();
        fragmentFirst.setGeoLocation(geoLocation);
        return fragmentFirst;
    }

    // Store instance variables based on arguments passed
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
    }
}
```

```
}

// Inflate the view for the fragment based on layout XML
@Override
public View onCreateView(LayoutInflater inflater, ViewGroup container,
                        Bundle savedInstanceState) {
    rootView = inflater.inflate(R.layout.sunset_fragment, container, false);
    initializeUI(rootView);
    return rootView;
}

private void initializeUI(View view) {
    TextView locationTV = view.findViewById(R.id.locationTV);
    locationTV.setText(geoLocation.getLocationName());
    DatePicker dp = view.findViewById(R.id.datePicker);
    Calendar cal = Calendar.getInstance();
    int year = cal.get(Calendar.YEAR);
    int month = cal.get(Calendar.MONTH);
    int day = cal.get(Calendar.DAY_OF_MONTH);
    dp.init(year, month, day, dateChangeHandler); // setup initial values and reg.
handler
    updateTime(view, year, month, day);
}

private void updateTime(View view, int year, int monthOfYear, int dayOfMonth) {
//    TimeZone tz = TimeZone.getDefault();
//    GeoLocation geolocation = new GeoLocation("Melbourne", -37.50, 145.01, tz);
    AstronomicalCalendar ac = new AstronomicalCalendar(geoLocation);
    ac.getCalendar().set(year, monthOfYear, dayOfMonth);
    Date srise = ac.getSunrise();
    Date sset = ac.getSunset();

    SimpleDateFormat sdf = new SimpleDateFormat("HH:mm");

    TextView sunriseTV = view.findViewById(R.id.sunriseTimeTV);
    TextView sunsetTV = view.findViewById(R.id.sunsetTimeTV);
    Log.d("SUNRISE Unformatted", srise+"");

    sunriseTV.setText(sdf.format(srise));
    sunsetTV.setText(sdf.format(sset));
}

    DatePicker.OnDateChangedListener dateChangeHandler = new
DatePicker.OnDateChangedListener()
{
    public void onChanged(DatePicker dp, int year, int monthOfYear, int
dayOfMonth)
    {
        updateTime(rootView, year, monthOfYear, dayOfMonth);
    }
};
}
```