Click2Cal

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OVERVIEW

PROJECT BACKGROUND AND DESCRIPTION

This app allows the user to take a picture of a poster, flyer, or banner of an event using his or her mobile phone. After image processing, the corresponding date, time and location of the event is added to their mobile calendar. The app allows the user to edit the event details to add any notes or extra information, and save the picture in the event details as a reference. The target market is anyone with an android phone.

PROJECT SCOPE AND HIGH LEVEL REQUIREMENTS

The major components of our app includes accessing the permissions to the calendar and camera android phones. To convert all of the picture's information to recognizable text, we use an OCR called Haven. We will parse the text output using regular expressions (RegEx). RegEx searches for patterns, numbers, and look for a set of words such as January, February, etc. The selected information output from regex is added to the calendar.

ROLES

Project Lead: Sneha Pradhan

GUI Designer: **Jay Angel**, Sneha Pradhan

Interface Designer: **Kiara Alberto**, Jay Angel

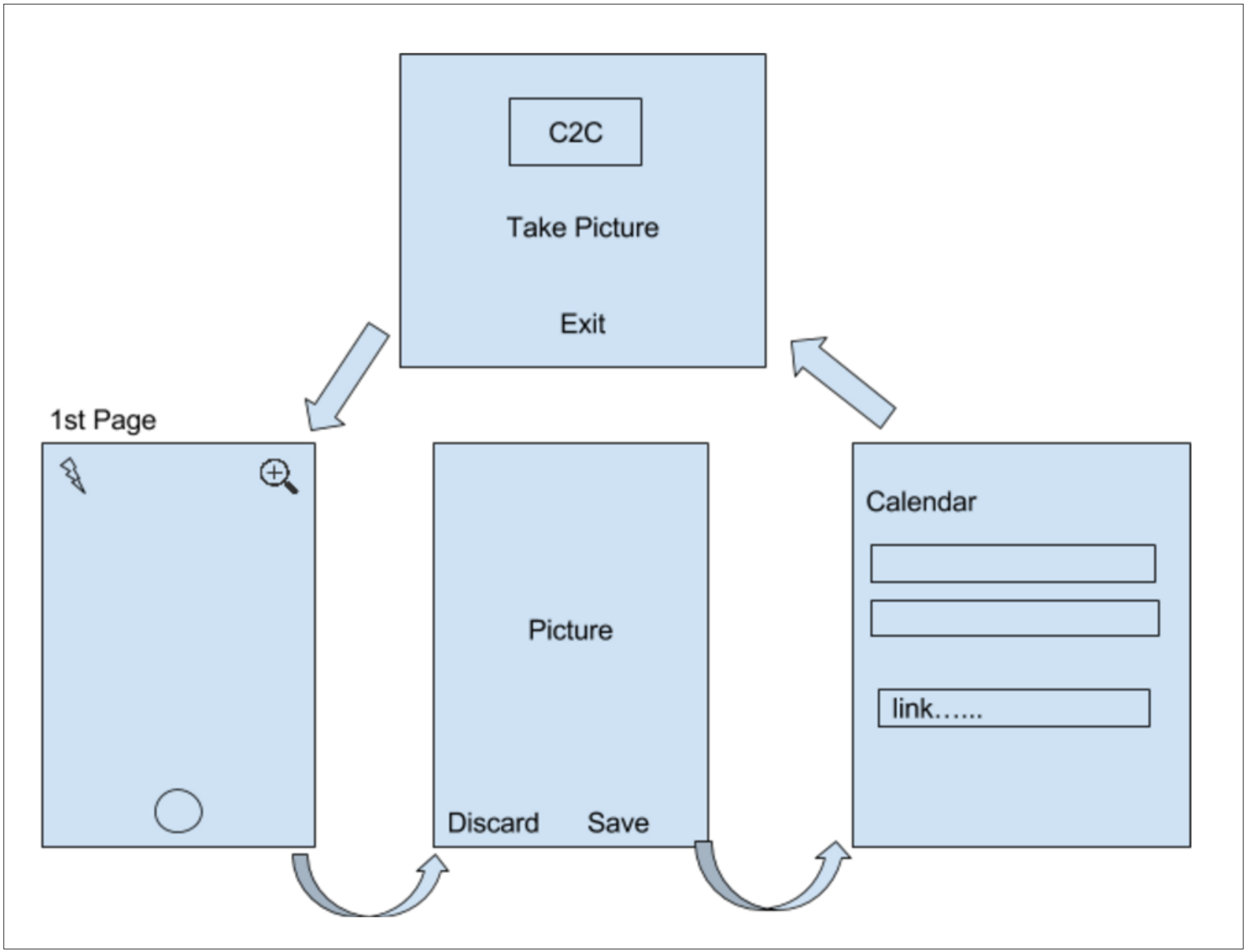
Processing Designer: **WonJae Yang**, Priya Kapadia

Documentation Manager: **Priya Kapadia**

DEVELOPING THE APP

PROJECT MAP

The landing page of our app is the camera. It is for the ease and convenience of the user. When the user takes a picture of a flyer, banner or event poster, Haven converts all the text on the image to a text file, which is then interpreted to retrieve the date and time of the event. The next screen is the Calendar, which pops up to show the user what is being saved. Here, the user has the option to edit the details of the event. Also, the image is saved to the event as a reference. When the user continues and saves the event, the app returns to the home screen. The home screen allows the user to take another picture of another event or to exit the app.



FRONT END

I. HOME SCREEN (SNEHA PRADHAN):

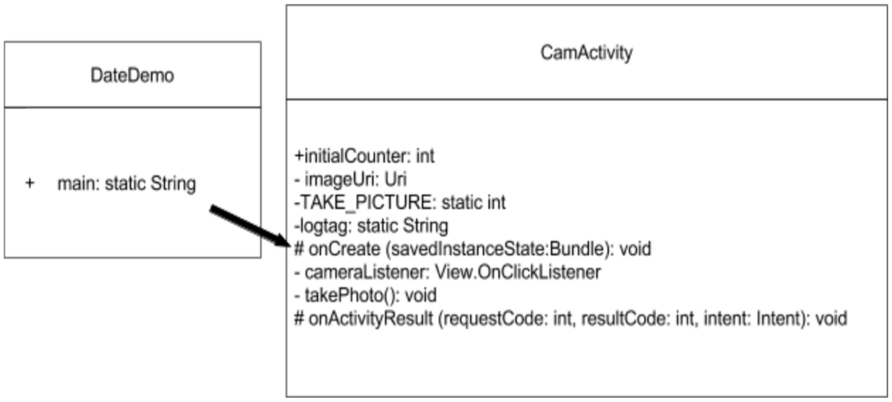
- After the user has saved the event in the calendar, Click2Cal takes him or her to the home screen. The Home Screen is a clean page that allows the user to take another picture or to exit the program. All the coding for the home page was done in Android Studio using Java and .xml.

II. CAMERA (JAY ANGEL):

- For our app's camera, we called the camera within the phone instead of creating a new one with all the features. The app saves the picture using the current date and time that the picture was taken at. We implemented this using a DateDemo class within the CamActivity class. The CamActivity class has the most functionality.

- The files that we had to include:

```
import android.app.Activity
import android.content.Intent
import android.net.Uri
import android.os.Bundle
import android.os.Environment
import android.provider.CalendarContract
import android.provider.MediaStore
import android.support.v7.app.AppCompatActivity
import android.util.Log
import android.view.View
import android.widget.Button
import android.widget.Toast
import java.io.File
import java.util.Calendar
```


DateDemo
+ main: static String
CamActivity
+initialCounter: int
- imageUri: Uri
-TAKE_PICTURE: static int
-logtag: static String
# onCreate (savedInstanceState:Bundle): void
- cameraListener: View.OnClickListener
- takePhoto(): void
# onActivityResult (requestCode: int, resultCode: int, intent: Intent): void

III. CALENDAR (JAY ANGEL):

- A new calendar object is created, which creates the calendar event. This causes the default calendar app to open a new event. Then using the set function, inherent to the calendar class, the date and time is passed to the calendar as integers. Then using intents we add more information to the calendar event, such as title, location, and ideally a link to the image that the camera just saved. This task is very hardware specific because not all calendars have an image option within their events. As a work around for the samsung galaxy we will ask users to manually link the image through their calendar app when the event pops up after the image is captured.
- Permissions:

```
android.permission.WRITE_EXTERNAL_STORAGE
android.permission.READ_CALENDAR
android.permission.WRITE_CALENDAR
```

BACK END

HAVEN ON DEMAND (KIARA ALBERTO):

- Haven OnDemand OCR is an Optical Content Recognition software that extracts text along with about the location of the detected text in the original image.The API returns the extracted text and information about the location of the detected text in the original image. The layout is not provided. The accuracy of the results can be improved by specifying the mode of the image.
- The different mode types include:
  - document_photo: This default mode that uses image that has been captured with variable light, usually with mobile phone camera.
  - document_scan: This mode is used for images that have been captured under constant lighting, usually with flat scanner.
  - scene_photo: This mode is used to capture images from a scene as signs and billboards.
  - subtitle: This mode is used to capture images with superimposed subtitles as found in TV subtitles.
  - (Source: https://dev.havenondemand.com/apis/ocrdocument#overview)
  - To access this API, we had to add an API key for our testing and production environment. The API itself uses an online library with HTTP Apache to convert the image to text. The output of this OCR would be a JSON Object.

REGULAR EXPRESSIONS (PRIYA KAPADIA AND WONJAE YANG):

- Regex is the standard language for parsing text and searching. To use it in Java, we had to import several libraries including:
- Files:

```
import java.util.regex.Matcher;
import java.util.regex.Pattern;
import java.util.Date;
import java.text.DateFormat;
import java.text.SimpleDateFormat;
import java.util.Calendar;
```

- Using inbuilt regex functions and classes, the parsing file search for patterns for the date and time using Pattern class and Matcher class. If the date was given in numerical values separated by either "-" or "/", then regex functions would catch the xx/xx/xxxx or xx-xx-xxxx formatted inputs and find the corresponding month, day, and year. A similar method was used to find the time of the event, but different regex formatting was implemented to find the correct hour and minutes. However, if the date is given in string text format ("January", "February", etc), each character in the input text gets compared to a list of month texts until a all the characters are matched. Once this occurs, the next two elements in the input array are stored as day and year respectively following the format of "Jan 23 2015".
- Options considered:
    - December 12th, 2015
    - Dec 12th, 2015
    - 12/12/2015
    - 11:00am
    - 11am
    - noon
    - 5:39pm

- Pseudocode
    - Get input
    - Input Editing
        - replace “noon” with “12am”
        - replace “\n” with an empty space
        - replace double empty spaces with single empty space

          Convert to lower-case, replace noon with 12am, and create an array from the input

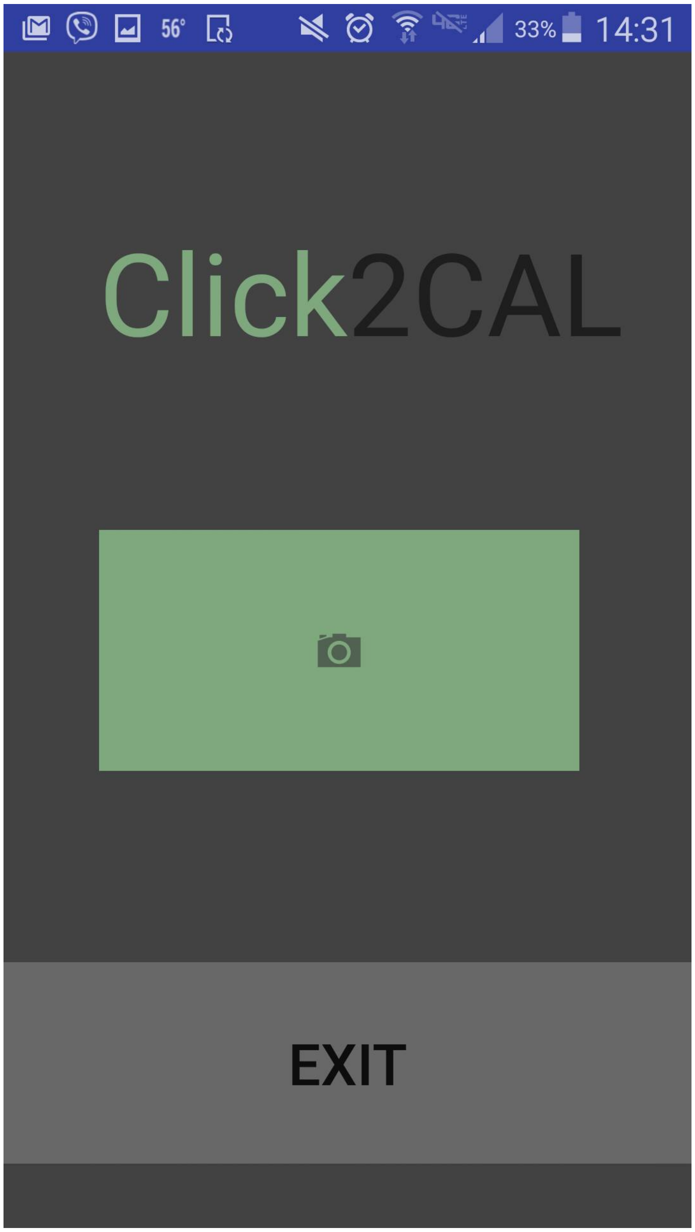
    - Date
        - Compare the input array to the month list array
        - If it matches, find the subsequent date and year
        - If there is no match, it searches for the month, day and year in the format xx/xx/xxxx or xx-xx-xxxx

    - Time
        - To find the time, the program searches for the pattern xx:xx using the following regex syntax: String regex_time = “^(1?[0-9]|2[0-3]):[0-5][0-9]$"
        - This is followed by the pattern class’s compile function which finds that pattern.
        - If time is pm, then 12 hours are added to the current hour to match military time.
        - If either the date or time is not found, the date and/or time is assigned to the current date and time.

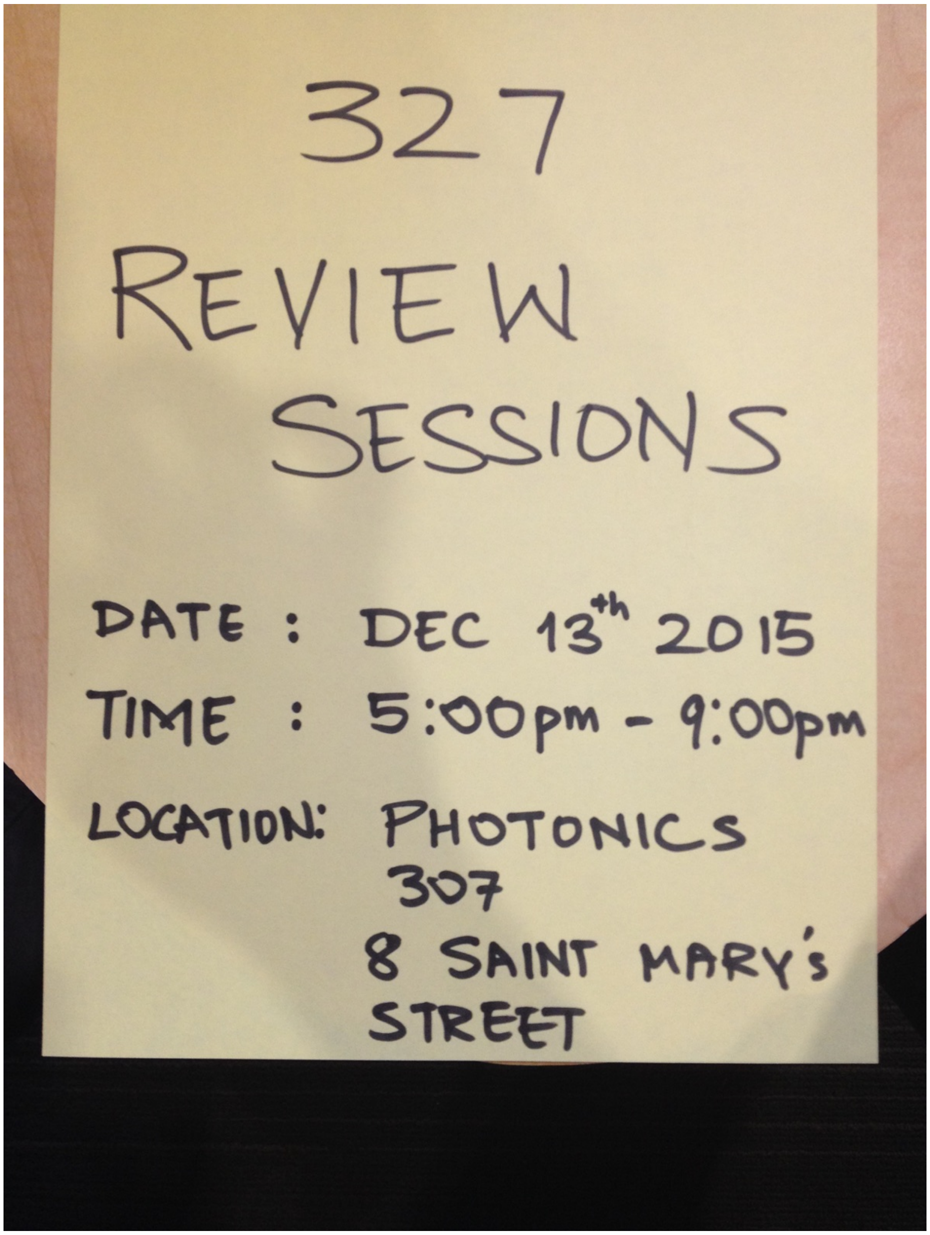
FINAL OUTPUT

Source Code Repository URL: https://github.com/snehha/CPQ

Home Screen



Event poster for processing



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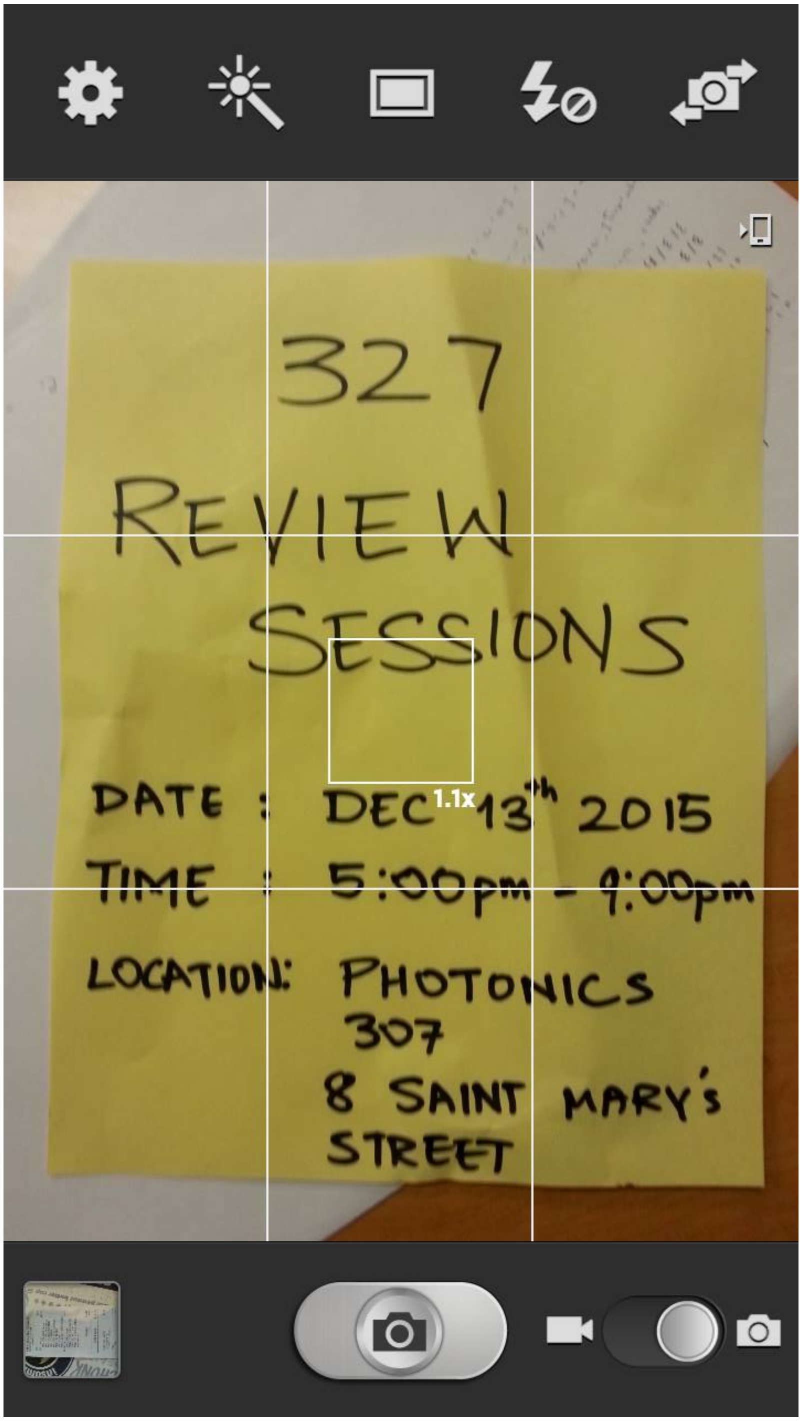
REVIEW SESSIONS

DATE : DEC 13th 2015

TIME : 5:00pm - 9:00pm

LOCATION: PHOTONICS
307
8 SAINT MARY'S
STREET

Camera of the Phone Accessed within the App



327

REVIEW SESSIONS

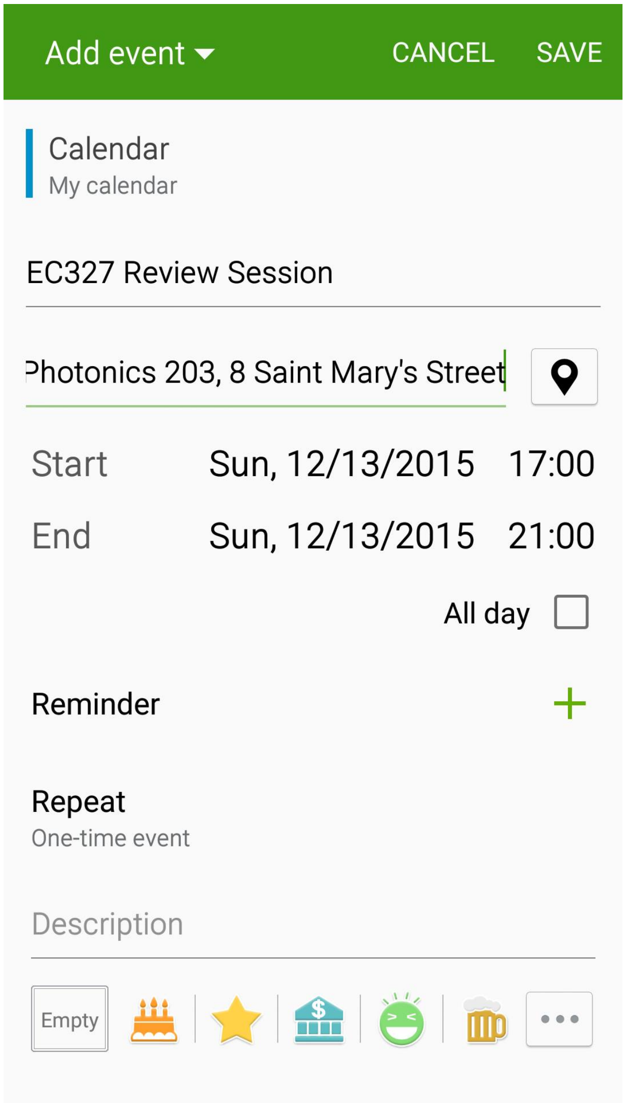
DATE : DEC 13th 2015

TIME : 5:00pm - 9:00pm

LOCATION: PHOTONICS
307
8 SAINT MARY's
STREET

Calendar

It creates an event with default name “Hey Now!”, which we can manually change to “EC327 Review Session.” The date and time are inputted automatically by the app.



Calendar
My calendar

EC327 Review Session

Photonics 203, 8 Saint Mary's Street

Start Sun, 12/13/2015 17:00

End Sun, 12/13/2015 21:00

All day □

Reminder +

Repeat
One-time event

Description