Lesson 23

Android
Notifications

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Notes are based on:
Android Developers
http://developer.android.com/index.html

Notifications

What is a Notification?

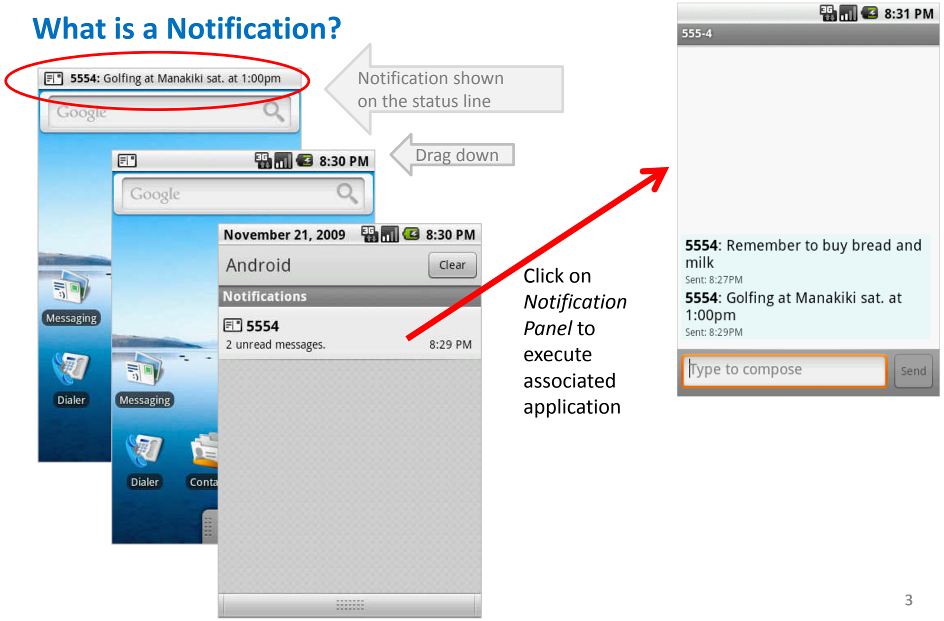
A *notification* is a short message briefly displayed on the *status line*.

It typically announces the happening of an special event for which a trigger has been set.

After opening the *Notification Panel* the user may choose to click on a selection and execute an associated activity.

Notifications

What is a Notification?



5554: Golfing at Manakiki sat. at 1:00pm

Notification shown on the status line

Drag down

November 21, 2009 8:30 PM

Android Clear

Notifications

5554
2 unread messages. 8:29 PM

Click on *Notification Panel* to execute associated application

8:31 PM

555-4

5554: Remember to buy bread and milk
Sent: 8:27PM

5554: Golfing at Manakiki sat. at 1:00pm
Sent: 8:29PM

Type to compose

Send

Notifications

Notification Manager

This class notifies the user of events that happen in the background.

Notifications can take different forms:

1. A persistent icon that goes in the status bar and is accessible through the launcher, (when the user selects it, a designated Intent can be launched),
2. Turning on or flashing LEDs on the device, or
3. Alerting the user by flashing the backlight, playing a sound, or vibrating.

Notifications – Since Jelly Bean 4.0

Base Layout

All notifications include in their MINIMUM configurations three parts:

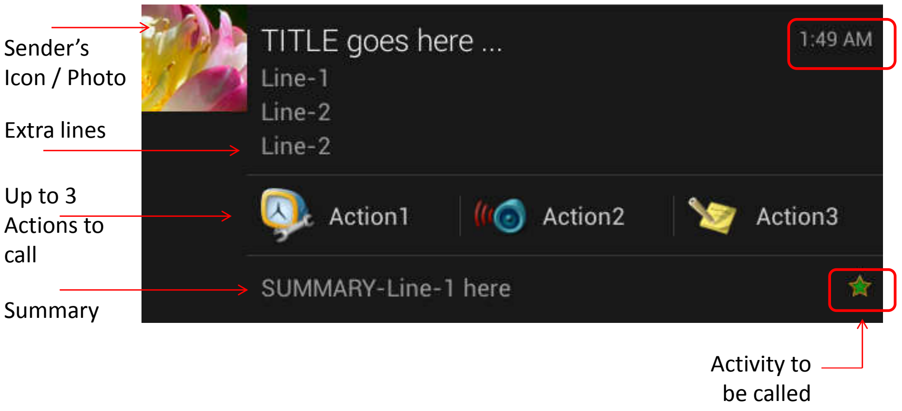
1. the sending application's notification icon or the sender's photo a notification title and message
2. a timestamp
3. a secondary icon to identify the sending application when the senders image is shown for the main icon

Optional Entries

1. Additional lines
2. Up to three actions
3. A summary line

Notifications – Since Jelly Bean 4.0

Extended Layout



Sender's Icon / Photo

Extra lines

Up to 3 Actions to call

Summary

Activity to be called

TITLE goes here ...

1:49 AM

Line-1

Line-2

Line-2

SUMMARY-Line-1 here

Notifications

Notification Manager

You do not instantiate this class directly; instead, retrieve it through **getSystemService (String)**.

Example:

```
String servName = Context.NOTIFICATION_SERVICE;

notificationManager = (NotificationManager)
                       getSystemService (servName);
```

Notifications

Notification Builder

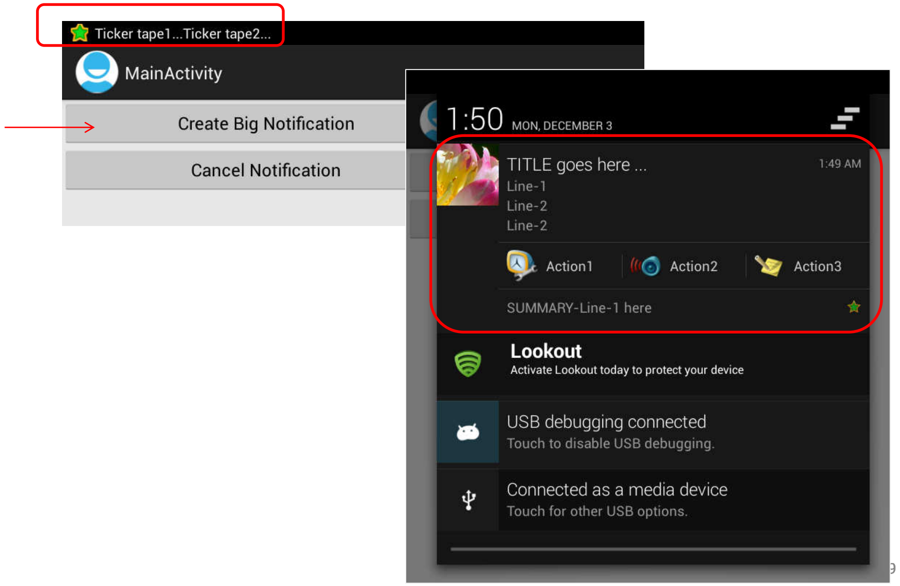
A convenient way to set up various fields of a **Notification**

Example:

```
Notification noti = new Notification.Builder(Context)
    .setContentTitle(“Important message for you...”)
    .setContentText(subject)
    .setSmallIcon(R.drawable.new_mail)
    .setLargeIcon(aBitmap)
    .build();
```

Notifications

Example



Ticker tape1...Ticker tape2...

MainActivity

Create Big Notification

Cancel Notification

1:50 MON, DECEMBER 3

TITLE goes here ... 1:49 AM

Line-1

Line-2

Line-2

Action1 Action2 Action3

SUMMARY-Line-1 here

Lookout

Activate Lookout today to protect your device

USB debugging connected

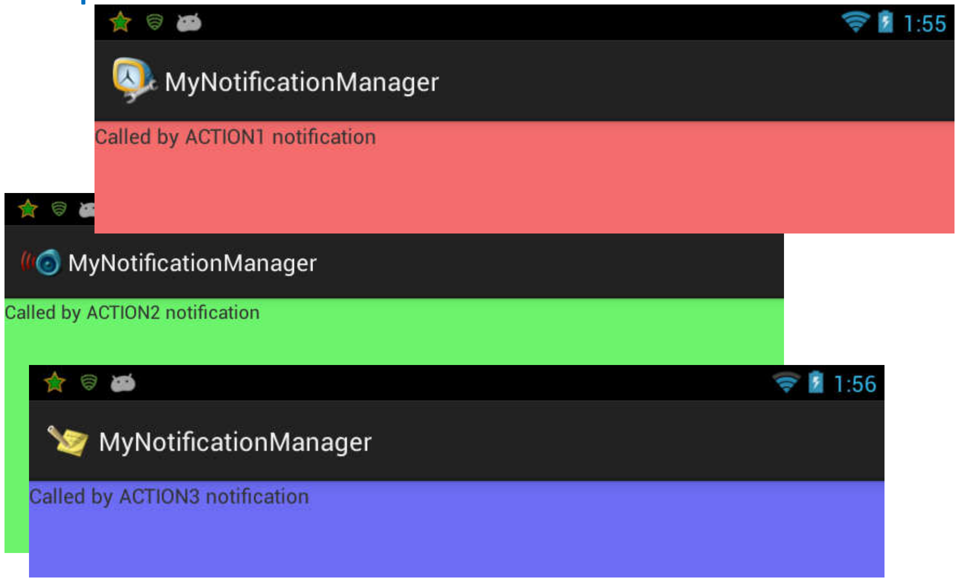
Touch to disable USB debugging.

Connected as a media device

Touch for other USB options.

Notifications

Example



1:55

MyNotificationManager

Called by ACTION1 notification

MyNotificationManager

Called by ACTION2 notification

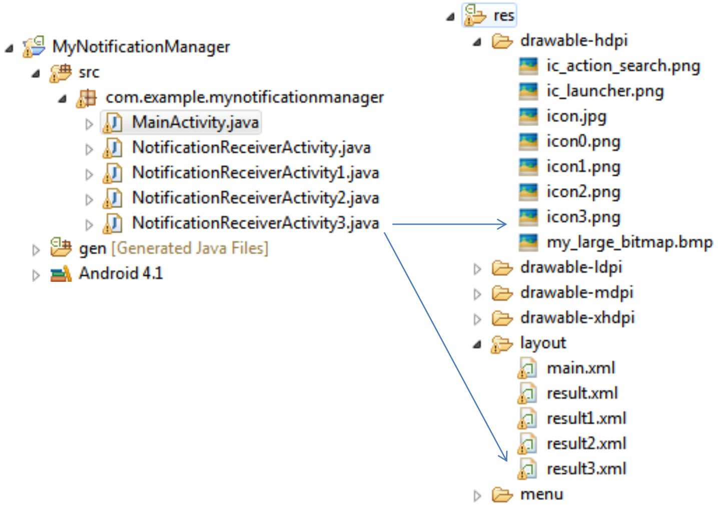
1:56

MyNotificationManager

Called by ACTION3 notification

Notifications

Example



MyNotificationManager
- src
  - com.example.mynotificationmanager
    - MainActivity.java
    - NotificationReceiverActivity.java
    - NotificationReceiverActivity1.java
    - NotificationReceiverActivity2.java
    - NotificationReceiverActivity3.java
- gen [Generated Java Files]
- Android 4.1

res
- drawable-hdpi
  - ic_action_search.png
  - ic_launcher.png
  - icon.jpg
  - icon0.png
  - icon1.png
  - icon2.png
  - icon3.png
  - my_large_bitmap.bmp
- drawable-ldpi
- drawable-mdpi
- drawable-xhdpi
- layout
  - main.xml
  - result.xml
  - result1.xml
  - result2.xml
  - result3.xml
- menu

Notifications

Example: MainActivity

```
package com.example.mynotificationmanager;
import . . .

public class MainActivity extends Activity implements OnClickListener {
  NotificationManager notificationManager;
  final int NOTIFICATION_ID = 12345;

  @Override
  public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);

    setContentView(R.layout.main);
    findViewById(R.id.btnBig).setOnClickListener(this);
    findViewById(R.id.btnCancel).setOnClickListener(this);

  }// onCreate

  @SuppressLint("NewApi")
  public void createBigNotification(View view) {

    Intent intent = new Intent(this, NotificationReceiverActivity.class);
    intent.putExtra("callerIntent", "main");
    intent.putExtra("notificationID", NOTIFICATION_ID);
    PendingIntent pIntent = PendingIntent.getActivity(this, 0, intent, 0);
```

Notifications

Example: MainActivity

```
    // better way to do previous work
    PendingIntent pIntent1 = makePendingIntent(
        NotificationReceiverActivity1.class, "Action1");
    PendingIntent pIntent2 = makePendingIntent(
        NotificationReceiverActivity2.class, "Action2");
    PendingIntent pIntent3 = makePendingIntent(
        NotificationReceiverActivity3.class, "Action3");

    // a bitmap to be added in the notification view
    Bitmap myBitmap = BitmapFactory.decodeResource(getResources(),
        R.drawable.my_large_bitmap);

    Notification.Builder baseNotification = new Notification.Builder(this)
        .setContentTitle("TITLE goes here ...")
        .setContentText("Second Line of text goes here")
        .setTicker("Ticker tape1...Ticker tape2...")
        .addAction(R.drawable.icon1, "Action1", pIntent1)
        .addAction(R.drawable.icon2, "Action2", pIntent2)
        .addAction(R.drawable.icon3, "Action3", pIntent3)
        .setSmallIcon(R.drawable.icon0)
        .setLargeIcon(myBitmap)
        .setLights(0xffcc00, 1000, 500)
        .setContentIntent(pIntent) ;
```

Notifications

Example: MainActivity

```
    Notification noti = new Notification.InboxStyle(baseNotification)
                  .addLine("Line-1")
                  .addLine("Line-2")
                  .addLine("Line-2")
                  .setSummaryText("SUMMARY-Line-1 here")
                  .build();

    notificationManager = (NotificationManager)
                       getSystemService(NOTIFICATION_SERVICE);
    // Hide the notification after its selected
    noti.flags |= Notification.FLAG_AUTO_CANCEL;
    // notification ID is 12345
    notificationManager.notify(12345, noti);

  }// createBigNotification

  @Override
  public void onClick(View v) {
    switch (v.getId()) {
    case R.id.btnBig:
      createBigNotification(v);
      break;
```

Notifications

Example: MainActivity

```
    case R.id.btnCancel :
      try {
        if ( notificationManager != null){
          notificationManager.cancel(NOTIFICATION_ID);
        }
      } catch (Exception e) {
        Log.e("<<MAIN>>", e.getMessage() );
      }
      break;

    }
  }// onClick

  public PendingIntent makePendingIntent(Class partnerClass, String callerName)
 {
    Intent intent = new Intent(this, partnerClass);
    intent.putExtra("callerIntent", callerName);
    intent.putExtra("notificationID", NOTIFICATION_ID);
    PendingIntent pIntent = PendingIntent.getActivity(this, 0, intent, 0);
    return pIntent;
  }

}// class
```

Notifications

Example: NotificationReceiverActivity

```
package com.example.mynotificationmanager;

import . . .

public class NotificationReceiverActivity extends Activity {
  @Override
  protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.result);

    String callerName = getIntent()
                       .getStringExtra("callerIntent");

    Toast.makeText(this, "Called by: " + callerName, 1).show();
  }
}
```

Notifications

Example: Manifest

```
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.mynotificationmanager"
    android:versionCode="1"
    android:versionName="1.0" >

    <uses-sdk
        android:minSdkVersion="8"
        android:targetSdkVersion="14" />

    <application
        android:icon="@drawable/ic_launcher"
        android:label="@string/app_name"
        android:theme="@style/AppTheme" ><activity
            android:name=".MainActivity"
            android:label="@string/title_activity_main" >
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>

        <activity android:name=".NotificationReceiverActivity"
                   android:icon="@drawable/icon0"   >
        </activity>
```

Notifications

Example: Manifest

```
   <activity android:name=".NotificationReceiverActivity1"
           android:icon="@drawable/icon1" >
   </activity>

   <activity android:name=".NotificationReceiverActivity2"
          android:icon="@drawable/icon2" >
   </activity>

   <activity android:name=".NotificationReceiverActivity3"
          android:icon="@drawable/icon3" >
   </activity>

  </application>

</manifest>
```

Notifications

Example - Layout: main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical" >

    <Button
        android:id="@+id/btnBig"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Create Big Notification"
        android:ems="20" >
    </Button>

    <Button
        android:id="@+id/btnCancel"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Cancel Notification"
        android:ems="20" >
    </Button>

</LinearLayout>
```

Notifications

Example - Layout: main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent" >

    <TextView
        android:id="@+id/txtMsg"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Called from the MASTER notification" >
    </TextView>

</LinearLayout>
```

Notifications (Before SDK 4.0)

Notification

This class represents how a persistent notification is to be presented to the user using the NotificationManager.

public Notification **(int** icon**, CharSequence** tickerText**, long** when**)**

Parameters

icon The resource id of the icon to put in the status bar.

tickerText The text that flows by in the status bar when the notification first activates.

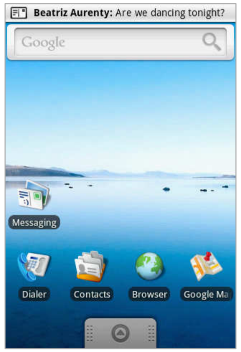
when The time to show in the time field.
In the System.currentTimeMillis timebase.

Notifications (Before SDK 4.0)

Notification - Methods

public void notify **(int** id**, Notification** notification**)**

Places a persistent notification on the status bar.



Beatriz Aurenty: Are we dancing tonight?

Parameters

id An identifier for this notification unique within your application.

notification A Notification object describing how to notify the user, other than the view you're providing.
Must not be null.

Notifications (Before SDK 4.0)

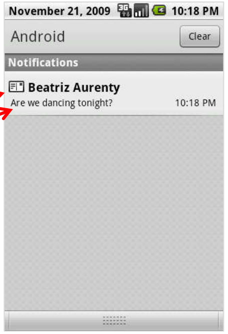
Notification – Methods

public void setLatestEventInfo **(**
Context context**, CharSequence** contentTitle**,**
CharSequence contentText**, PendingIntent** contentIntent**)**

Sets the contentView field to be a view with the standard "Latest Event" layout.

Parameters

context The context for your application / activity.
contentTitle The title that goes in the expanded entry.
contentText The text that goes in the expanded entry.
contentIntent The intent to launch when the user clicks the expanded notification.



November 21, 2009 10:18 PM

Android

Notifications

Beatriz Aurenty
Are we dancing tonight? 10:18 PM

Notifications (Before SDK 4.0)

Notification – Methods

public void cancel **(int** id **)**
public void cancelAll ( )

Cancel a previously shown notification. If it's transient, the view will be hidden. If it's persistent, it will be removed from the status bar.

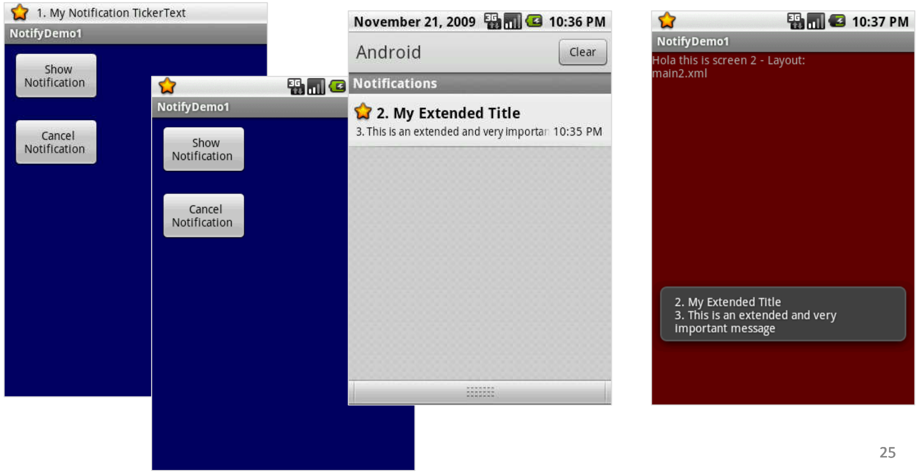
Parameters

Id An identifier for this notification unique within your application.

Notifications (Before SDK 4.0)

Example.

Produce a notification. Allow the user to click on the Notification Panel and execute appropriate activity to attend the message.



2. My Extended Title
3. This is an extended and very importar 10:35 PM

Hola this is screen 2 - Layout: main2.xml

2. My Extended Title
3. This is an extended and very important message

Notifications (Before SDK 4.0)

Example - Layouts

main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
  android:id="@+id/myLinearLayout1"
  android:layout_width="fill_parent"
  android:layout_height="fill_parent"
  android:background="#ff000066"
  android:orientation="vertical"
  xmlns:android="http://schemas.android.com/apk/res/android" >

<Button
  android:id="@+id/btnGo"
  android:layout_width="106dp"
  android:layout_height="61dp"
  android:layout_margin="10dp"
  android:text=" Show Notification " >
</Button>
<Button
  android:id="@+id/btnStop"
  android:layout_width="106dp"
  android:layout_height="61dp"
  android:layout_margin="10dp"
  android:text=" Cancel Notification " >
</Button>

</LinearLayout>
```

main2.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
  android:id="@+id/main2LinLayout"
  android:layout_width="fill_parent"
  android:layout_height="fill_parent"
  android:background="#ff660000"
  android:orientation="vertical"
xmlns:android="http://schemas.android.com/apk/res/an
droid"
>

<TextView
  android:id="@+id/widget29"
  android:layout_width="251dp"
  android:layout_height="69dp"
  android:text="Hola this is screen 2 - Layout:main2.xml"
>
</TextView>

</LinearLayout>
```

Notifications (Before SDK 4.0)

Example – Manifest

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
     package="cis493.demos"
     android:versionCode="1"
     android:versionName="1.0">

      <application android:icon="@drawable/icon"
                 android:label="@string/app_name">

      <activity android:name=".NotifyDemo1"
               android:label="@string/app_name">
         <intent-filter>
            <action android:name="android.intent.action.MAIN" />
            <category android:name="android.intent.category.LAUNCHER" />
         </intent-filter>
      </activity>

      <activity android:name=".NotifyHelper" >
      </activity>

    </application>

    <uses-sdk android:minSdkVersion="4" />

</manifest>
```

/drawable

btn_star_big_on_selected.png

Note:
Obtain the icon from the folder

C:\Android\platforms\android-1.x\data\res\drawable

Notifications (Before SDK 4.0)

Example – Create & Cancel a Notification

```
package cis493.demos;

import . . .

public class NotifyDemo1 extends Activity {
    Button btnGo;
    Button btnStop;
    int  notificationId = 1;
    NotificationManager notificationManager;

    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);
```

Notifications (Before SDK 4.0)

Example – Create & Cancel a Notification

```
    btnGo = (Button)findViewById(R.id.btnGo);
    btnGo.setOnClickListener(new OnClickListener() {

    public void onClick(View v) {
      //define a notification manager
      String serName = Context.NOTIFICATION_SERVICE;
      notificationManager = (NotificationManager)getSystemService(serName);

      //define notification using: icon, text, and timing.
      int icon = R.drawable.btn_star_big_on_selected;
      String tickerText = "1. My Notification TickerText";
     long when = System.currentTimeMillis();
     Notification notification = new Notification(icon, tickerText, when);

     //configure appearance of the notification
      String extendedTitle = "2. My Extended Title";
      String extendedText  = "3. This is an extended and very important message";

     Intent intent = new Intent(getApplicationContext(), NotifyHelper.class);
      intent.putExtra("extendedText", extendedText);
      intent.putExtra("extendedTitle", extendedTitle);
      PendingIntent launchIntent =
           PendingIntent.getActivity(getApplicationContext(),0,intent,0);
```

Notifications (Before SDK 4.0)

Example – Create & Cancel a Notification

```
       notification.setLatestEventInfo(getApplicationContext(),
                                    extendedTitle, extendedText,
                                    launchIntent);
        //trigger notification
        notificationId = 1;
        notificationManager.notify(notificationId, notification);

       }//click
      });

        btnStop = (Button)findViewById(R.id.btnStop);
        btnStop.setOnClickListener(new OnClickListener() {
        public void onClick(View v) {
          //canceling a notification
          notificationId = 1;
          notificationManager.cancel(notificationId);
         }
        });
    }//onCreate
}//NotifyDemo1
```

Notifications (Before SDK 4.0)

Example - SubActivity – Attending the Notification

```
package cis493.demos;

Import. . .

public class NotifyHelper extends Activity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
        setContentView(R.layout.main2);

        Intent myData = getIntent();
        // extract the extra-data in the Notification
        String msg = myData.getStringExtra("extendedTitle") + "\n"
                   + myData.getStringExtra("extendedText");

        Toast.makeText(getApplicationContext(), msg, 1).show();
    }
}
```

Notifications

Questions