Architektura systemu

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System Apps
Dialer
Email
Calendar
Camera
. . .
Java API Framework
Content Providers
View System
Managers
Activity
Location
Package
Notification
Resource
Telephony
Window
Native C/C++ Libraries
Webkit
OpenMAX AL
Libc
Media Framework
OpenGL ES
. . .
Android Runtime
Android Runtime (ART)
Core Libraries
Hardware Abstraction Layer (HAL)
Audio
Bluetooth
Camera
Sensors
. . .
Linux Kernel
Drivers
Audio
Binder (IPC)
Display
Keypad
Bluetooth
Camera
Shared Memory
USB
WIFI
Power Management

Sensory

Dostępne różne czujniki zależnie od urządzenia

TYPE_ACCELEROMETER

TYPE_AMBIENT_TEMPERATURE

TYPE_GRAVITY

TYPE_GYROSCOPE

TYPE_LIGHT

TYPE_LINEAR_ACCELERATION

TYPE_MAGNETIC_FIELD

TYPE_ORIENTATION

TYPE_PRESSURE

TYPE_PROXIMITY

TYPE_RELATIVE_HUMIDITY

TYPE_ROTATION_VECTOR

TYPE_TEMPERATUR

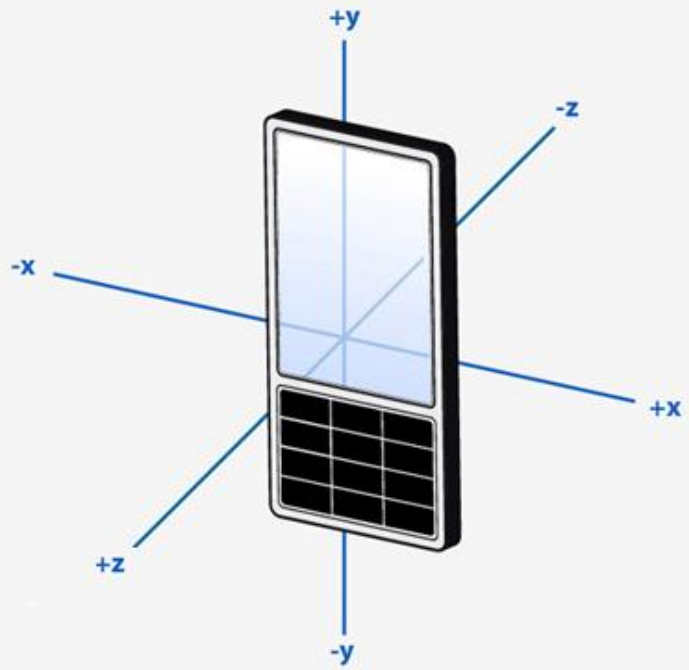
Dostępność sensorów

Sensor	Android 4.0 (API Level 14)	Android 2.3 (API Level 9)	Android 2.2 (API Level 8)	Android 1.5 (API Level 3)
TYPE_ACCELEROMETER	Yes	Yes	Yes	Yes
TYPE_AMBIENT_TEMPERATURE	Yes	n/a	n/a	n/a
TYPE_GRAVITY	Yes	Yes	n/a	n/a
TYPE_GYROSCOPE	Yes	Yes	n/a[1]	n/a[1]
TYPE_LIGHT	Yes	Yes	Yes	Yes
TYPE_LINEAR_ACCELERATION	Yes	Yes	n/a	n/a
TYPE_MAGNETIC_FIELD	Yes	Yes	Yes	Yes
TYPE_ORIENTATION	Yes[2]	Yes[2]	Yes[2]	Yes
TYPE_PRESSURE	Yes	Yes	n/a[1]	n/a[1]
TYPE_PROXIMITY	Yes	Yes	Yes	Yes
TYPE_RELATIVE_HUMIDITY	Yes	n/a	n/a	n/a
TYPE_ROTATION_VECTOR	Yes	Yes	n/a	n/a
TYPE_TEMPERATURE	Yes[2]	Yes	Yes	Yes

Sensor - akcelerometr

```
SensorManager mSensorManager = (SensorManager) context.getSystemService(SENSOR_SERVICE);
Sensor mAccelerometer = mSensorManager.getDefaultSensor(Sensor.TYPE_ACCELEROMETER);
```

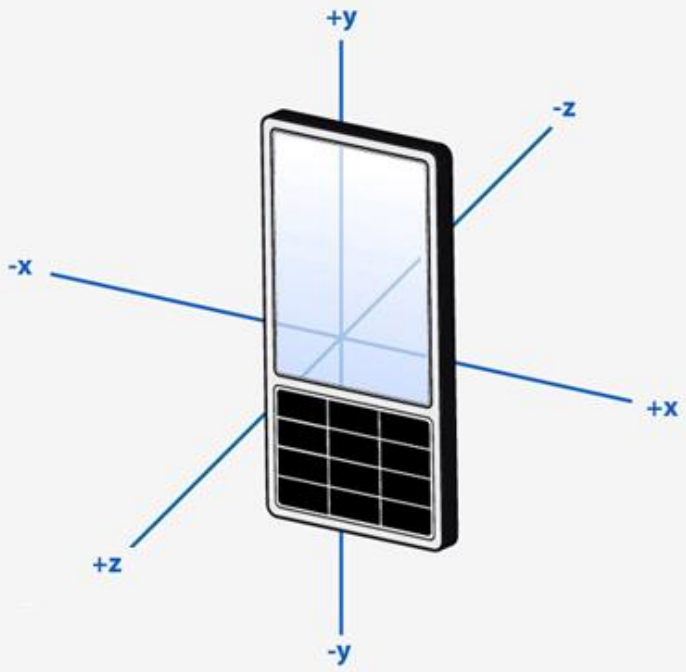
```
//onResume
mSensorManager.registerListener(NavActivity.this, mAccelerometer,
SensorManager.SENSOR_DELAY_NORMAL);

//onPause
mSensorManager.unregisterListener(NavActivity.this);
```



Sensor - akcelerometr

SensorEventListener

```
@Override
public void onSensorChange(SensorEvent sensorEvent) {
    Sensor mySensor = sensorEvent.sensor;
    if (mySensor.getType() == Sensor.TYPE_ACCELEROMETER) {
        float x = sensorEvent.values[0];
        float y = sensorEvent.values[1];
        float z = sensorEvent.values[2];
    }
}
@Override
public void onAccuracyChanged(Sensor sensor, int accuracy) {
}
```



Zadanie 1

Utwórz aplikację która:

- Będzie nasłuchiwać akcelerometr
- Wydrukuje pozycję x, y, z za pomocą Log.i() w dowolnym formacie

Dodatkowo dla chętnych

- Dodaj 3 pola tekstowe
- Aktualizuj je gdy zmienią sie parametry akcelerometru

Zadanie 2

Przetestuj inne sensory ☺

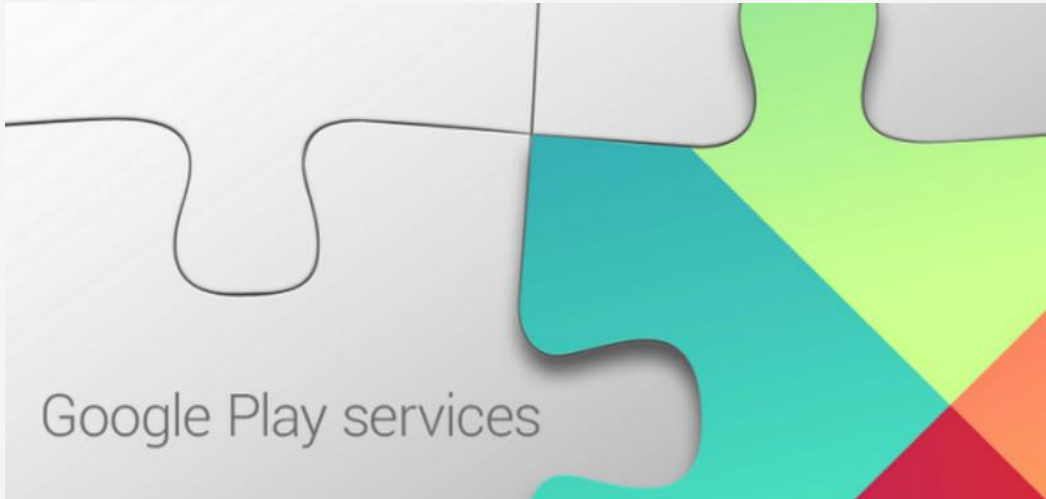
Zadanie 3

Napisz aplikację gdzie sprawdzisz i wyświetlisz informację:

- Czy jest dostępny GPS
- Czy jest dostępny czytnik linii papilarnych
- Czy jest dostępny aparat fotograficzny

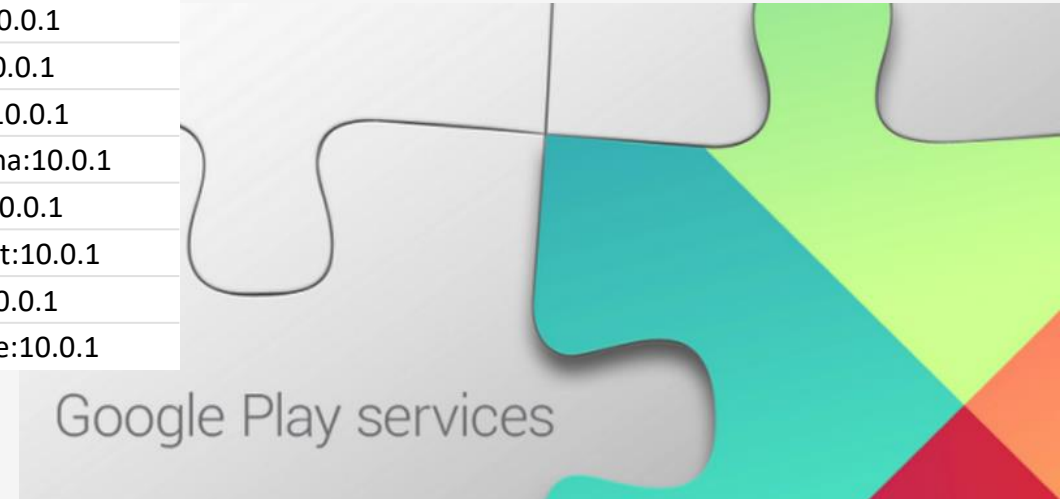
Biblioteki i Frameworki

Butter Knife



Biblioteki i Frameworki

Google Play services API	Description in build.gradle
Google+	com.google.android.gms:play-services-plus:10.0.1
Google Account Login	com.google.android.gms:play-services-auth:10.0.1
Google Actions, Base Client Library	com.google.android.gms:play-services-base:10.0.1
Google Address API	com.google.android.gms:play-services-identity:10.0.1
Firebase App Indexing	com.google.firebase:firebase-appindexing:10.0.1
Google Analytics	com.google.android.gms:play-services-analytics:10.0.1
Google Awareness	com.google.android.gms:play-services-awareness:10.0.1
Google Cast	com.google.android.gms:play-services-cast:10.0.1
Google Cloud Messaging	com.google.android.gms:play-services-gcm:10.0.1
Google Drive	com.google.android.gms:play-services-drive:10.0.1
Google Fit	com.google.android.gms:play-services-fitness:10.0.1
Google Location and Activity Recognition	com.google.android.gms:play-services-location:10.0.1
Google Maps	com.google.android.gms:play-services-maps:10.0.1
Google Mobile Ads	com.google.android.gms:play-services-ads:10.0.1
Google Places	com.google.android.gms:play-services-places:10.0.1
Mobile Vision	com.google.android.gms:play-services-vision:10.0.1
Google Nearby	com.google.android.gms:play-services-nearby:10.0.1
Google Panorama Viewer	com.google.android.gms:play-services-panorama:10.0.1
Google Play Game services	com.google.android.gms:play-services-games:10.0.1
SafetyNet	com.google.android.gms:play-services-safetynet:10.0.1
Android Pay	com.google.android.gms:play-services-wallet:10.0.1
Android Wear	com.google.android.gms:play-services-wearable:10.0.1



Butter Knife


```
@BindView(R.id.footer) TextView footer;
```

```
ButterKnife.bind(this);
```

```
dependencies {
    compile fileTree(include: ['*.jar'], dir: 'libs')
    compile 'com.jakewharton:butterknife:8.4.0'
}
```

Butter Knife

Zadanie 3

Przerób dowolny program na Butter Knife

- Dodaj bibliotekę do dependencies
- Kliknij synchronizację projektu
- Usuń pobieranie elementów za pomocą funkcji findViewById()
- Użyj @BindView(R.id.nazwa)