

KFEI's Terminal App for Android™

Source code Document

Version 1.0

2023/4/11

Table of Contents

Hierarchical Index

Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

| | |
|---|----|
| com.kagafei.kfapp_terminal.Terminal.EOL_TYPE..... | 18 |
| com.kagafei.kfapp_terminal.Terminal.FORMAT | 19 |
| AppCompatActivity | |
| com.kagafei.kfapp_terminal.DeviceSelection..... | 13 |
| com.kagafei.kfapp_terminal.Terminal | 22 |
| BaseAdapter | |
| com.kagafei.kfapp_terminal.BeaconFragment.CustomAdapter..... | 11 |
| com.kagafei.kfapp_terminal.ConnectableFragment.CustomAdapter..... | 12 |
| Binder | |
| com.kagafei.kfapp_terminal.BLEService.LocalBinder..... | 20 |
| Fragment | |
| com.kagafei.kfapp_terminal.BeaconFragment..... | 4 |
| com.kagafei.kfapp_terminal.ConnectableFragment..... | 10 |
| FragmentStatePagerAdapter | |
| com.kagafei.kfapp_terminal.DeviceSelection.MyPagerAdapter | 21 |
| Service | |
| com.kagafei.kfapp_terminal.BLEService | 6 |

Class Index

Class List

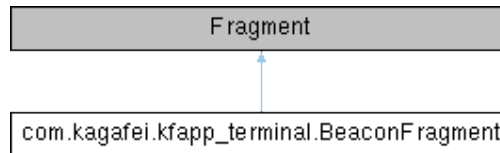
Here are the classes, structs, unions and interfaces with brief descriptions:

| | |
|--|----|
| <code>com.kagafei.kfapp_terminal.BeaconFragment</code> | 4 |
| <code>com.kagafei.kfapp_terminal.BLEService</code> | 6 |
| <code>com.kagafei.kfapp_terminal.ConnectableFragment</code> | 10 |
| <code>com.kagafei.kfapp_terminal.BeaconFragment.CustomAdapter</code> (This class extends the BaseAdapter to hold a list of Bluetooth devices discovered during scanning. New devices are allocated a 'device' layout which is populated and added to the list) | 11 |
| <code>com.kagafei.kfapp_terminal.ConnectableFragment.CustomAdapter</code> (This class extends the BaseAdapter to hold a list of Bluetooth devices discovered during scanning. New devices are allocated a 'device' layout which is populated and added to the list) | 12 |
| <code>com.kagafei.kfapp_terminal.DeviceSelection</code> | 13 |
| <code>com.kagafei.kfapp_terminal.Terminal.EOL_TYPE</code> | 18 |
| <code>com.kagafei.kfapp_terminal.Terminal.FORMAT</code> | 19 |
| <code>com.kagafei.kfapp_terminal.BLEService.LocalBinder</code> | 20 |
| <code>com.kagafei.kfapp_terminal.DeviceSelection.MyPagerAdapter</code> | 21 |
| <code>com.kagafei.kfapp_terminal.Terminal</code> | 22 |

Class Documentation

com.kagafei.kfapp_terminal.BeaconFragment Class Reference

Inheritance diagram for com.kagafei.kfapp_terminal.BeaconFragment:



Classes

- class **CustomAdapter**
This class extends the BaseAdapter to hold a list of Bluetooth devices discovered during scanning. New devices are allocated a 'device' layout which is populated and added to the list.

Public Member Functions

- View **onCreateView** (LayoutInflater inflater, ViewGroup container, Bundle savedInstanceState)
- void **updateBeacons** (ArrayList< Beacon > beacons)

Private Attributes

- String **TAG** = "Beacon Fragment"
- **CustomAdapter deviceAdapter**
- ArrayList< Beacon > **beaconList**
- AdapterView.OnItemClickListener **listenerItemSelected**

Member Function Documentation

void com.kagafei.kfapp_terminal.BeaconFragment.updateBeacons (ArrayList< Beacon > beacons)

Update the beacon list

Parameters

| | |
|----------------|--------------------|
| <i>beacons</i> | discovered beacons |
|----------------|--------------------|

Member Data Documentation

AdapterView.OnItemClickListener

com.kagafei.kfapp_terminal.BeaconFragment.listenerItemSelected [private]

```

Initial value:= new AdapterView.OnItemClickListener() {
    @Override
    public void onItemClick(AdapterView<?> parent, View view, int position, long id)
    {
        final Beacon device = beaconList.get(position);
        Log.d(TAG, "Device " + device.getName() + " selected");

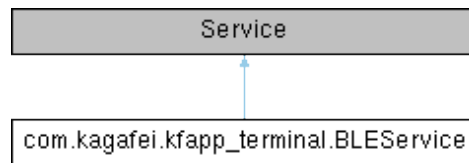
        Toast.makeText(getActivity().getApplicationContext(), "Connecting to
beacons is not allowed", Toast.LENGTH_SHORT).show();
    }
}
  
```

The documentation for this class was generated from the following file:

- `app/src/main/java/com/kagafei/kfapp_terminal/BeaconFragment.java`

com.kagafei.kfapp_terminal.BLEService Class Reference

Inheritance diagram for com.kagafei.kfapp_terminal.BLEService:



Classes

- class **LocalBinder**

Public Member Functions

- IBinder **onBind** (Intent intent)
- boolean **onUnbind** (Intent intent)
- boolean **initialiseService** ()
- void **startScan** (final ScanCallback scanCallback)
- void **stopScan** (final ScanCallback scanCallback)
- BluetoothGatt **connectToDevice** (String address)
- boolean **readPhyConnection** ()
- boolean **setPreferredPhyConnection** (int phymask)
- void **disconnectDevice** ()
- BluetoothGatt **getGattInstance** ()
- List< BluetoothGattService > **getServices** ()
- BluetoothGattService **getService** (UUID uuid)

Static Public Attributes

- static final String **ACTION_GATT_CONNECTED**
Intent on successful connection to GATT server hosted on remote device.
- static final String **ACTION_GATT_DISCONNECTED**
Intent broadcast when remote GATT server is no longer connected.
- static final String **ACTION_GATT_SERVICES**
Intent broadcast when remote device service discovery is finished.
- static final String **ACTION_DATA_RECEIVED**
Intent broadcast on data received from remote device.
- static final String **ACTION_DESCRIPTOR_WROTE**
Intent broadcast when descriptor wrote.
- static final String **ACTION_PHY_READ**
Intent broadcast when phy read.

Private Member Functions

- void **phyCheck** ()

Private Attributes

- BluetoothAdapter **mBluetoothAdapter**

- BluetoothGatt **mBluetoothGatt**
- ScanSettings **settings**
- BluetoothLeScanner **mLEScanner**
- List< ScanFilter > **filterList**
- IBinder **mBinder** = new **LocalBinder()**
- final BluetoothGattCallback **mGattCallback**

Static Private Attributes

- static final String **TAG** = "BLE Service"

Detailed Description

Background service for interfacing with Bluetooth radio. Provides a number of functions related to BLE device discovery and connection.

Date

10/18/2016

Member Function Documentation

BluetoothGatt **com.kagafei.kfapp_terminal.BLEService.connectToDevice (String address)**

Connect to the remote device at the specified address

Parameters

| | |
|----------------|--|
| <i>address</i> | MAC identifier of the device to connect to |
|----------------|--|

Returns

Bluetooth Gatt instance for accessing device specific methods

void com.kagafei.kfapp_terminal.BLEService.disconnectDevice ()

Disconnect from the currently connected device

BluetoothGatt **com.kagafei.kfapp_terminal.BLEService.getGattInstance ()**

Get an instance of the currently connected device GATT

Returns

Bluetooth Gatt instance for accessing device specific methods

BluetoothGattService **com.kagafei.kfapp_terminal.BLEService.getService (UUID uuid)**

Get the peripheral service associated with a specific UUID

Parameters

| | |
|-------------|---------------------------------|
| <i>uuid</i> | UUID of the service to retrieve |
|-------------|---------------------------------|

Returns

BluetoothGattService, or null if not present on peripheral

List< BluetoothGattService > **com.kagafei.kfapp_terminal.BLEService.getServices ()**

Get a list of discovered services for the currently connected peripheral

Returns

List of services associated with the connected peripheral

boolean com.kagafei.kfapp_terminal.BLEService.initialiseService ()

Service initialisation. Acquires Bluetooth components and checks hardware states.

Returns

False if a component is not available

IBinder com.kagafei.kfapp_terminal.BLEService.onBind (Intent *intent*)

Function called when application binds to this service

Parameters

| | |
|---------------|--|
| <i>intent</i> | Explicit intent referencing this class |
|---------------|--|

Returns

Binder to this service

boolean com.kagafei.kfapp_terminal.BLEService.onUnbind (Intent *intent*)

Function called when application unbinds from this service. Service will be destroyed if no more connections are present.

Parameters

| | |
|---------------|--|
| <i>intent</i> | Explicit intent referencing this class |
|---------------|--|

boolean com.kagafei.kfapp_terminal.BLEService.readPhyConnection ()

Read PHY on current connection.

boolean com.kagafei.kfapp_terminal.BLEService.setPreferredPhyConnection (int *phymask*)

set PHY to this connection.

Parameters

| | |
|----------------|--|
| <i>phymask</i> | PHY mask value. 1Mbps/2Mbps/Coded. BluetoothDevice.PHY_LE_1M_MASK/BluetoothDevice.PHY_LE_2M_MASK/BluetoothDevice.PHY_LE_CODED_MASK. |
|----------------|--|

void com.kagafei.kfapp_terminal.BLEService.startScan (final ScanCallback *scanCallback*)

Initiates scanning for discoverable Bluetooth devices. No timeout.

Parameters

| | |
|---------------------|---|
| <i>scanCallback</i> | Callback object to notify on device discovery |
|---------------------|---|

void com.kagafei.kfapp_terminal.BLEService.stopScan (final ScanCallback *scanCallback*)

Stop a previously initiated scan.

Parameters

| | |
|---------------------|---------------------------------------|
| <i>scanCallback</i> | Callback object used to initiate scan |
|---------------------|---------------------------------------|

Member Data Documentation**final BluetoothGattCallback****com.kagafei.kfapp_terminal.BLEService.mGattCallback [private]**

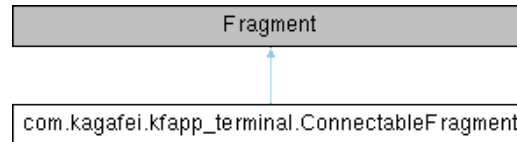
Callback for GATT events (device specific). Broadcasts intents to application.

The documentation for this class was generated from the following file:

- `app/src/main/java/com/kagafei/kfapp_terminal/BLEService.java`

com.kagafei.kfapp_terminal.ConnectableFragment Class Reference

Inheritance diagram for com.kagafei.kfapp_terminal.ConnectableFragment:



Classes

- class **CustomAdapter**
This class extends the BaseAdapter to hold a list of Bluetooth devices discovered during scanning. New devices are allocated a 'device' layout which is populated and added to the list.

Public Member Functions

- View **onCreateView** (LayoutInflater inflater, ViewGroup container, Bundle savedInstanceState)
- void **updateConnectable** (ArrayList< Advertiser > newdevices)

Private Attributes

- String TAG = "Connectable Fragment"
- ArrayList< Advertiser > **deviceList** = DeviceSelection.connectabledeviceList
- **CustomAdapter deviceAdapter**
- AdapterView.OnItemClickListener **listenerItemSelected**

Member Data Documentation

AdapterView.OnItemClickListener

com.kagafei.kfapp_terminal.ConnectableFragment.listenerItemSelected [private]

```
Initial value:= new AdapterView.OnItemClickListener() {
    @Override
    public void onItemClick(AdapterView<?> parent, View view, int position, long id)
    {
        final Advertiser advertiser = deviceList.get(position);
        BluetoothDevice device = advertiser.GetBluetoothDevice();

        Log.d(TAG, "Device " + device.getName() + " selected");
        ((DeviceSelection) getActivity()).connectDevice(device.getAddress());
    }
}
```

The documentation for this class was generated from the following file:

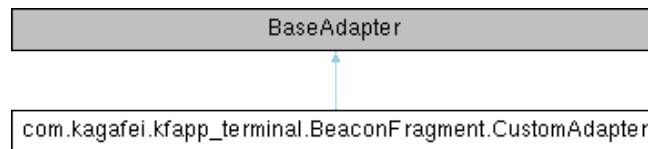
- app/src/main/java/com/kagafei/kfapp_terminal/ConnectableFragment.java

com.kagafei.kfapp_terminal.BeaconFragment.CustomAdapter Class Reference

This class extends the BaseAdapter to hold a list of Bluetooth devices discovered during scanning. New devices are allocated a 'device' layout which is populated and added to the list.

Inheritance diagram for

com.kagafei.kfapp_terminal.BeaconFragment.CustomAdapter:



Public Member Functions

- int **getItemViewType** (int position)
- Beacon **getItem** (int position)
- long **getItemId** (int position)
- int **getCount** ()
- View **getView** (final int position, View convertView, ViewGroup parent)

Private Member Functions

- void **parseIbeaconData** (byte[] data)

Private Attributes

- Context **context**
- List< Beacon > **deviceList**
- String **P_UUID**
- String **Major**
- String **Minor**
- String **Measured_power**

Detailed Description

This class extends the BaseAdapter to hold a list of Bluetooth devices discovered during scanning. New devices are allocated a 'device' layout which is populated and added to the list.

Member Function Documentation

void com.kagafei.kfapp_terminal.BeaconFragment.CustomAdapter.parseIbeaconData (byte[] *data*)[private]

Parse ibeacon byte array to string value

Parameters

| | |
|-------------|-------------------------|
| <i>data</i> | ibeacon byte data array |
|-------------|-------------------------|

The documentation for this class was generated from the following file:

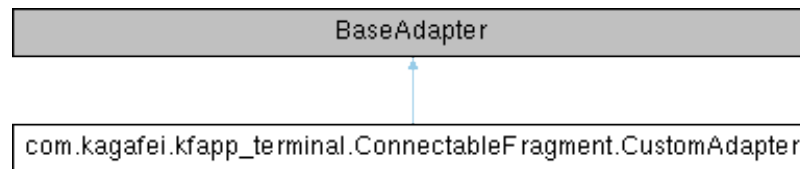
- app/src/main/java/com/kagafei/kfapp_terminal/BeaconFragment.java

com.kagafei.kfapp_terminal.ConnectableFragment.CustomAdapter Class Reference

This class extends the BaseAdapter to hold a list of Bluetooth devices discovered during scanning. New devices are allocated a 'device' layout which is populated and added to the list.

Inheritance diagram for

com.kagafei.kfapp_terminal.ConnectableFragment.CustomAdapter:



Public Member Functions

- Advertiser **getItem** (int position)
- long **getItemId** (int position)
- int **getCount** ()
- View **getView** (final int position, View convertView, ViewGroup parent)

Private Attributes

- Context **context**
- List< Advertiser > **deviceList**

Detailed Description

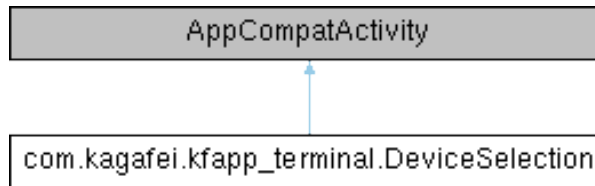
This class extends the BaseAdapter to hold a list of Bluetooth devices discovered during scanning. New devices are allocated a 'device' layout which is populated and added to the list.

The documentation for this class was generated from the following file:

- app/src/main/java/com/kagafei/kfapp_terminal/ConnectableFragment.java

com.kagafei.kfapp_terminal.DeviceSelection Class Reference

Inheritance diagram for com.kagafei.kfapp_terminal.DeviceSelection:



Classes

- class **MyPagerAdapter**

Public Member Functions

- void **onRequestPermissionsResult** (int requestCode, String[] permissions, int[] grantResults)
- void **connectDevice** (String address)

Static Public Attributes

- static final String **REQUEST_ENABLE_BT_DENIED**
Status notifying that user declined to enable Bluetooth service.
- static ArrayList< Advertiser > **connectabledeviceList**

Protected Member Functions

- void **onCreate** (Bundle savedInstanceState)
Initialises UI components, performs a permissions check and binds to BLE service class.
- void **onStart** ()
- void **onResume** ()
Checks state of Bluetooth radio and resumes scanning for BLE devices.
- void **onPause** ()
Halts BLE scanning while activity is not running in the foreground.
- void **onDestroy** ()
- void **onActivityResult** (int requestCode, int result, Intent data)

Private Member Functions

- void **bindToService** ()
- void **StartScanning** ()
- void **StopScanning** ()
- boolean **checkiBeacon** (ScanRecord scanRecord)
- Advertiser **getAdvertiserByDeviceAddress** (String address)
- void **addDevice** (BluetoothDevice device, int rssi, int phy1, int phy2)
Add a newly discovered device to the list so it can be displayed on the UI. Updates devices already present.
- void **addBeacon** (BluetoothDevice device, ScanRecord scanRecord, int rssi, int type, int phy1, int phy2)
- boolean **checkIfPermissionIsGranted** (ArrayList< String > permissions)
Check one by one of the permissions is granted.

- boolean **checkPermissions ()**
Checks if the user has previously accepted permissions request for this application. If not a dialog window is displayed to request permission to access location services.
- boolean **isBluetoothEnabled ()**
Check state of Bluetooth system service to ensure connection is still valid.
- boolean **isLocationEnabled ()**
Check state of Location system service to allow scanning (req'd in API >=23 - Marshmallow)

Private Attributes

- **BLEService mService**
- ArrayList< Beacon > **beaconsList**
- HashMap< String, Integer > **RSSI**
- ViewPager **vpPager**
- FragmentStatePagerAdapter **adapterViewPager**
- **ConnectableFragment connectable**
- **BeaconFragment beacon**
- boolean **requestBluetooth** = false
- boolean **bindService** = false
- boolean **permissionAccepted** = false
- BroadcastReceiver **HardwareStatusReceiver**
- ServiceConnection **mServiceConnection**
- ScanCallback **mScanCallback**

Static Private Attributes

- static final String **TAG** = "TerminalApp"
- static final int **PERMISSION_REQUEST_LOCATION** = 0
- static final int **PERMISSION_REQUEST_BLUETOOTH** = 1
- static final int **REQUEST_ENABLE_BT** = 1
- static final int **REQUEST_OPEN_TERMINAL** = 2
- static final int **REQUEST_ENABLE_LOCATION** = 3
- static final short[] **ibeacon_prefix** = {0x02,0x01,0x06,0x1A,0xff,0x4C,0x00,0x02,0x15}

Detailed Description

Main application activity launched at runtime. This activity connects to the **BLEService** and initiates scanning for Bluetooth Low Energy compatible devices. Discovered devices will appear as selectable items on the application UI, selection of a device will launch the **Terminal** activity.

Activity will prompt user for permission to access location on first launch of application (necessary due to known Android bug requiring location permission for background BLE scanning). Activity will request for enabling Bluetooth system service if it is disabled. Not accepting this request will exit the application.

Date

10/18/2016

Member Function Documentation

void com.kagafei.kfapp_terminal.DeviceSelection.addBeacon (BluetoothDevice *device*, ScanRecord *scanRecord*, int *rssi*, int *type*, int *phy1*, int *phy2*) [private]

If the data is beacon format update the beacon list

Parameters

| | |
|-------------------|---|
| <i>device</i> | Bluetooth device adress |
| <i>scanRecord</i> | device data |
| <i>rssi</i> | Signal strength of device |
| <i>type</i> | enum type identifier for when is ibeacon device |
| <i>phy1</i> | |
| <i>phy2</i> | |

void com.kagafei.kfapp_terminal.DeviceSelection.addDevice (BluetoothDevice *device*, int *rssi*, int *phy1*, int *phy2*) [private]

Add a newly discovered device to the list so it can be displayed on the UI. Updates devices already present.

Parameters

| | |
|---------------|--------------------------------|
| <i>device</i> | Bluetooth device to add/update |
| <i>rssi</i> | Signal strength of device |

void com.kagafei.kfapp_terminal.DeviceSelection.bindToService () [private]

Bind to BLE service so we can initiate scanning

boolean com.kagafei.kfapp_terminal.DeviceSelection.checkiBeacon (ScanRecord *scanRecord*) [private]

Check if advertising data matches beacon format

Parameters

| | |
|-------------------|-----------------|
| <i>scanRecord</i> | ble device data |
|-------------------|-----------------|

Returns

boolean

boolean com.kagafei.kfapp_terminal.DeviceSelection.checkIfPermissionsGranted (ArrayList< String > *permissions*) [private]

Check one by one of the permissions is granted.

Parameters

| | |
|--------------------|---------------------|
| <i>permissions</i> | list of permissions |
|--------------------|---------------------|

Returns

boolean

boolean com.kagafei.kfapp_terminal.DeviceSelection.checkPermissions () [private]

Checks if the user has previously accepted permissions request for this application. If not a dialog window is displayed to request permission to access location services.

Note

Required as of API level 23

If api version is between 23 and 30 then request ACCESS_FINE_LOCATION and ACCESS_COARSE_LOCATION

If api version greater than 30 then request only BLUETOOTH_CONNECT and BLUETOOTH_SCAN

void com.kagafei.kfapp_terminal.DeviceSelection.connectDevice (String *address*)

Connect to device

Parameters

| | |
|----------------|----------------------------|
| <i>address</i> | target device's BD address |
|----------------|----------------------------|

Advertiser

com.kagafei.kfapp_terminal.DeviceSelection.getAdvertiserByDeviceAddress (String *address*) [private]

Get advertising device object by BD address.

Parameters

| | |
|----------------|----------------------------|
| <i>address</i> | target device's BD address |
|----------------|----------------------------|

Returns

object

boolean com.kagafei.kfapp_terminal.DeviceSelection.isBluetoothEnabled () [private]

Check state of Bluetooth system service to ensure connection is still valid.

Returns

True if okay, false if we have to make a request

boolean com.kagafei.kfapp_terminal.DeviceSelection.isLocationEnabled () [private]

Check state of Location system service to allow scanning (req'd in API >=23 - Marshmallow)

Returns

True if okay, false if we have to make a request

void com.kagafei.kfapp_terminal.DeviceSelection.onRequestPermissionsResult (int *requestCode*, String[] *permissions*, int[] *grantResults*)

Handles results of permission requests

Parameters

| | |
|---------------------|---|
| <i>requestCode</i> | Value used to request permission dialog |
| <i>permissions</i> | List of permissions requested from user |
| <i>grantResults</i> | Results of each permission request |

void com.kagafei.kfapp_terminal.DeviceSelection.StartScanning () [private]

Start scanning for devices

void com.kagafei.kfapp_terminal.DeviceSelection.StopScanning () [private]

Stop the ble scanner

Member Data Documentation

BroadcastReceiver

com.kagafei.kfapp_terminal.DeviceSelection.HardwareStatusReceiver [private]

```
Initial value:= new BroadcastReceiver() {
    @Override
    public void onReceive(Context context, Intent intent) {
        switch (intent.getAction()) {

            case BluetoothAdapter.ACTION_STATE_CHANGED:
            case LocationManager.PROVIDERS_CHANGED_ACTION:
                StartScanning();
                break;

        }
    }
}
```

Receiver for BluetoothAdapter state changes (Bluetooth service enabled/disabled)

ScanCallback com.kagafei.kfapp_terminal.DeviceSelection.mScanCallback [private]

Callback for the scanning API Above 26

ServiceConnection

com.kagafei.kfapp_terminal.DeviceSelection.mServiceConnection [private]

```
Initial value:= new ServiceConnection() {

    public void onServiceConnected(ComponentName className, IBinder rawBinder) {
        mService = ((LocalBinder) rawBinder).getService();
        Log.d(TAG, "onServiceConnected mService= " + mService);
        bindService = true;

        if (!mService.initialiseService()) {
            finish();
        } else {
            StartScanning();
        }
    }

    public void onServiceDisconnected(ComponentName classname) {
        Log.d(TAG, "onServiceDisconnected");
        StopScanning();
        mService = null;
        bindService = false;
    }
}
```

The documentation for this class was generated from the following file:

- app/src/main/java/com/kagafei/kfapp_terminal/DeviceSelection.java

com.kagafei.kfapp_terminal.Terminal.EOL_TYPE Enum Reference

Public Attributes

- None
 - CR
 - LF
 - CRLF
-

Detailed Description

End of line's type

Member Data Documentation

com.kagafei.kfapp_terminal.Terminal.EOL_TYPE.CR

CR

com.kagafei.kfapp_terminal.Terminal.EOL_TYPE.CRLF

CR+LF

com.kagafei.kfapp_terminal.Terminal.EOL_TYPE.LF

LF

com.kagafei.kfapp_terminal.Terminal.EOL_TYPE.None

None

The documentation for this enum was generated from the following file:

- app/src/main/java/com/kagafei/kfapp_terminal/Terminal.java

com.kagafei.kfapp_terminal.Terminal.FORMAT Enum Reference

Public Attributes

- Ascii
 - Hex
-

Detailed Description

Data format

Member Data Documentation

com.kagafei.kfapp_terminal.Terminal.FORMAT.Ascii

Ascii format

com.kagafei.kfapp_terminal.Terminal.FORMAT.Hex

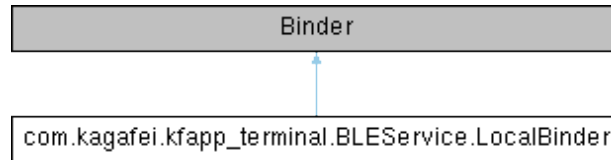
Hex format

The documentation for this enum was generated from the following file:

- app/src/main/java/com/kagafei/kfapp_terminal/Terminal.java

com.kagafei.kfapp_terminal.BLEService.LocalBinder Class Reference

Inheritance diagram for com.kagafei.kfapp_terminal.BLEService.LocalBinder:



Detailed Description

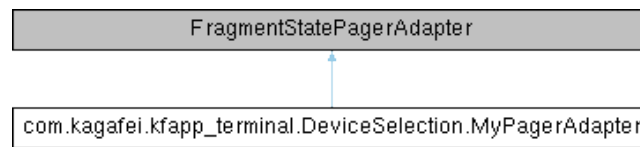
Custom binder class for connecting to this service

The documentation for this class was generated from the following file:

- app/src/main/java/com/kagafei/kfapp_terminal/BLEService.java

com.kagafei.kfapp_terminal.DeviceSelection.MyPagerAdapter Class Reference

Inheritance diagram for
com.kagafei.kfapp_terminal.DeviceSelection.MyPagerAdapter:



Public Member Functions

- **MyPagerAdapter** (FragmentManager fragmentManager, Context context)
- **int getCount ()**
Returns total number of pages.
- **Fragment getItem** (int position)
Returns the fragment to display for that page.
- **CharSequence getPageTitle** (int position)
Returns the page title for the top indicator.
- **Object instantiateItem** (ViewGroup container, int position)
- **int getItemPosition** (Object object)

Private Attributes

- **int NUM_ITEMS** = 2
- **HashMap< Integer, Fragment > registeredFragments** = new HashMap<>()
- **String[] tabTitles** = {"Connectable", "Beacons"}
- **Context context**

Detailed Description

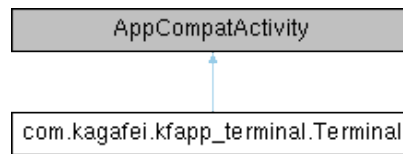
ViewPager Class for the fragments

The documentation for this class was generated from the following file:

- app/src/main/java/com/kagafei/kfapp_terminal/DeviceSelection.java

com.kagafei.kfapp_terminal.Terminal Class Reference

Inheritance diagram for com.kagafei.kfapp_terminal.Terminal:



Classes

- enum **EOL_TYPE**
- enum **FORMAT**
- class **QueueAdapter**

Static Public Attributes

- static final UUID **KFEI_SERVICE_UUID** =
UUID.fromString("442F1570-8A00-9A28-CBE1-E1D4212D53EB")
- static final UUID **NOTIFICATION_CHARACTERISTIC_UUID** =
UUID.fromString("442F1571-8A00-9A28-CBE1-E1D4212D53EB")
- static final UUID **WRITE_NO_RESPONSE_CHARACTERISTIC_UUID** =
UUID.fromString("442F1572-8A00-9A28-CBE1-E1D4212D53EB")
- static final UUID **INDICATION_CHARACTERISTIC_UUID** =
UUID.fromString("442F1573-8A00-9A28-CBE1-E1D4212D53EB")
- static final UUID **BATTERY_SERVICE_UUID** =
UUID.fromString("0000180f-0000-1000-8000-00805f9b34fb")
- static final UUID **BATTERY_LEVEL_UUID** =
UUID.fromString("00002a19-0000-1000-8000-00805f9b34fb")

Protected Member Functions

- void **onCreate** (Bundle savedInstanceState)
Initialises UI (partial until device connection succeeds) and connects to the BLE service.
- void **onResume** ()
Checks the status of the Bluetooth adapter and device connection before resuming activity.
- void **onDestroy** ()
Unregisters receivers and unbinds from BLE service.
- void **onActivityResult** (int requestCode, int result, Intent data)
Checks the result of user request to enable Bluetooth system service.

Private Member Functions

- void **showFormatSelect** ()
- void **showEOLSelect** ()
- void **showPhySelect** ()
- void **pageInit** ()
- void **sendMessage** (String message)
Handles delivery of message to connected device.
- byte[] **ascii2hex** (byte[] bytes)
Converts a byte array of ascii to hexadecimal.

- byte[] **hex2string** (byte[] bytes)
Converts a byte array of hexadecimal values to characters.
- byte **getValidHex** (byte b)
- void **printMessageToScreen** (String message)
- void **checkBluetoothEnabled** ()

Private Attributes

- final String **TAG** = "TerminalWindow"
- final int **MAX_MESSAGE_COUNT** = 20
- String **rxMessage**
- Handler **mHandler** =new Handler()
- ListView **messagePane**
- QueueAdapter **messageAdapter**
- ArrayList< String > **messageLog**
- ArrayList< Character > **direction**
- ArrayAdapter< CharSequence > **inputFormatSelector**
- ArrayAdapter< CharSequence > **lineFinishSelector**
- BluetoothGatt **mBluetoothGatt**
- **BLEService mService**
- BluetoothDevice **device**
- BluetoothGattService **KagaFeiService**
- BluetoothGattService **BatteryService**
- BluetoothGattCharacteristic **NotificationChar**
- BluetoothGattCharacteristic **WriteChar**
- BluetoothGattCharacteristic **IndicationChar**
- BluetoothGattCharacteristic **batteryLevelChar**
- int **connectionPHY** = 0
- ServiceConnection **mServiceConnection**
- View.OnClickListener **menu_click_listener**
- PopupMenu.OnMenuItemClickListener **menu_item_click_listener**

Static Private Attributes

- static final int **REQUEST_ENABLE_BT** = 1
- static final String **ACTION_TX_FINISHED** = "com.kagafei.kfapp_terminal.ACTION_TX_FINISHED"
- static final String **ACTION_TX_ERROR** = "com.kagafei.kfapp_terminal.ACTION_TX_ERROR"
- static **FORMAT input_format** = **FORMAT.Ascii**
- static **EOL_TYPE eol_type** = **EOL_TYPE.None**
- static final UUID **CCCD** = UUID.fromString("00002902-0000-1000-8000-00805f9b34fb")

Detailed Description

This class presents a terminal-style UI to allow users to send and receive characters via BLE to a remote device running the Kaga Fei terminal firmware. Device connection and service discovery take place on activity launch. Connection succeeds only if the device reports the Kaga Fei specific service and characteristic UUIDs. Users may select the input format type using the selection box (default: Ascii) or exit the terminal and return to the device selection screen using the 'Back' button. The activity also finishes if a GATT disconnection intent is received

Date

10 /18/2016

Member Function Documentation

byte[] com.kagafei.kfapp_terminal.Terminal.ascii2hex (byte[] bytes)[private]

Converts a byte array of ascii to hexadecimal.

Parameters

| | |
|--------------|---------------------|
| <i>bytes</i> | byte array of ascii |
|--------------|---------------------|

Returns

Hex formatted string

void com.kagafei.kfapp_terminal.Terminal.checkBluetoothEnabled ()[private]

Check state of Bluetooth system service to ensure connection is still valid

byte com.kagafei.kfapp_terminal.Terminal.isValidHex (byte b)[private]

Checks if a character is a valid hexadecimal character

Parameters

| | |
|----------|-------------------|
| <i>b</i> | Hexadecimal value |
|----------|-------------------|

Returns

Ascii value of character, 0xFE if special character, 0xFF if invalid

byte[] com.kagafei.kfapp_terminal.Terminal.hex2string (byte[] bytes)[private]

Converts a byte array of hexadecimal values to characters.

Parameters

| | |
|--------------|--------------------------|
| <i>bytes</i> | Byte array of hex values |
|--------------|--------------------------|

Returns

Ascii formatted string

void com.kagafei.kfapp_terminal.Terminal.pageInit ()[private]

Initialises page elements upon successful device connection

void com.kagafei.kfapp_terminal.Terminal.printMessageToScreen (String message)[private]

Adds a message to the adapter and updates the display

Parameters

| | |
|----------------|-------------------|
| <i>message</i> | String to display |
|----------------|-------------------|

void com.kagafei.kfapp_terminal.Terminal.sendMessage (String message)[private]

Handles delivery of message to connected device.

Parameters

| | |
|----------------|---------------------|
| <i>message</i> | Message to transmit |
|----------------|---------------------|

Message is converted to specified format (if non-Ascii) and transmitted to remote device using WriteChar characteristic. As BLE can only handle 20 byte data payloads, this function handles delivery of sequential packets until entire message is successfully transmitted. The selected line endings will be appended prior to transmission

Note

This function is called on a non-UI thread to avoid blocking user interaction.

void com.kagafei.kfapp_terminal.Terminal.showEOLSelect () [private]

Show an AlertDialog to select the EOL character (None, CR, LF, CRLF)

void com.kagafei.kfapp_terminal.Terminal.showFormatSelect () [private]

Show an AlertDialog to select the data format (Ascii, Hex)

void com.kagafei.kfapp_terminal.Terminal.showPhySelect () [private]

Show PHY on current connection

Member Data Documentation

**final UUID com.kagafei.kfapp_terminal.Terminal.BATTERY_LEVEL_UUID =
UUID.fromString("00002a19-0000-1000-8000-00805f9b34fb") [static]**

Battery Level Characteristic UUID

**final UUID com.kagafei.kfapp_terminal.Terminal.BATTERY_SERVICE_UUID =
UUID.fromString("0000180f-0000-1000-8000-00805f9b34fb") [static]**

Battery Service UUID

**final UUID com.kagafei.kfapp_terminal.Terminal.CCCD =
UUID.fromString("00002902-0000-1000-8000-00805f9b34fb") [static], [private]**

cccd UUID

**final UUID com.kagafei.kfapp_terminal.Terminal.INDICATION_CHARACTERISTIC_UUID
= UUID.fromString("442F1573-8A00-9A28-CBE1-E1D4212D53EB") [static]**

Kaga Fei Read Indication Characteristic UUID

**final UUID com.kagafei.kfapp_terminal.Terminal.KFEI_SERVICE_UUID =
UUID.fromString("442F1570-8A00-9A28-CBE1-E1D4212D53EB") [static]**

Kaga Fei Service UUID

View.OnClickListener

com.kagafei.kfapp_terminal.Terminal.menu_click_listener [private]

```
Initial value:= new View.OnClickListener() {  
    @Override  
    public void onClick(View view) {  
        PopupMenu popup = new PopupMenu(getApplicationContext(), view);  
        popup.setOnMenuItemClickListener(menu_item_click_listener);  
        MenuInflater inflater = popup.getMenuInflater();  
        inflater.inflate(R.menu.menu_items, popup.getMenu());  
        popup.getMenu().getItem(0).setTitle("Format: " + input_format.name());  
        popup.getMenu().getItem(1).setTitle("EOL: " + eol_type.name());  
        popup.show();  
    }  
}
```

PopupMenu.OnMenuItemClickListener

com.kagafei.kfapp_terminal.Terminal.menu_item_click_listener [private]

```
Initial value:= new PopupMenu.OnMenuItemClickListener() {
    @Override
    public boolean onMenuItemClick(MenuItem menuItem) {
        switch (menuItem.getItemId()){
            case R.id.opt_clear:

                messageAdapter.clearMessages();
                return true;
            case R.id.opt_inputformat:

                showFormatSelect();
                return true;
            case R.id.opt_eolselect:
                showEOLSelect();
                return true;
            default:
                return false;
        }
    }
}
```

ServiceConnection

com.kagafei.kfapp_terminal.Terminal.mServiceConnection [private]

Interface to BLE service, registers receiver for GATT events (device connection, service discovery etc.) and requests connection to device. If connection fails the activity is terminated.

final UUID

com.kagafei.kfapp_terminal.Terminal.NOTIFICATION_CHARACTERISTIC_UUID =
UUID.fromString("442F1571-8A00-9A28-CBE1-E1D4212D53EB") [static]

Kaga Fei Read Notification Characteristic UUID

final UUID

com.kagafei.kfapp_terminal.Terminal.WRITE_NO_RESPONSE_CHARACTERISTIC_UII
D = UUID.fromString("442F1572-8A00-9A28-CBE1-E1D4212D53EB") [static]

Kaga Fei Write No Response Characteristic UUID

The documentation for this class was generated from the following file:

- app/src/main/java/com/kagafei/kfapp_terminal/Terminal.java