Macaco Data Schema

Tao Peng
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Tables

Tables_in_macacodb	
acceleration	accelerometer
app	network traffic sent/received by apps

battery	battery status and remain level
bluetooth	scan result of nearby bluetooth devices
connectivity	current connectivity (cellular or Wi-Fi, SSID if it is Wi-Fi)
history	browser history
ip	IP address
location	geographical coordinator
measurements	meta data of a measurement (a measurement is one sensing action on the phone, which involves different sensors)
memory	memory status
network	cellular network
proximity	proximity between the phone and the user's face
running_app	apps those are running on the phone, exactly when the measurement is taking place
wifi	scan result of neary Wi-Fi Access Points

measurements

meta data of a measurement

id	other table contains a foreign key "measurement_id" referring to this field
device_id	hashed IMEI
timestamp_fire	when the measurement is initiated

In each of the following tables, there is field "timestamp", which is the time when that particular parameter is measured. Because different parameters (e.g., Wi-Fi and Bluetooth) takes some time to finish, and we use a pool of threads to execute the measurement task of different parameters, the measurement of different parameters in the same measurement action may actually have slight different complete time. "timestamp" provides more precise timestamp for that particular parameter.

acceleration

http://developer.android.com/reference/android/hardware/SensorEvent.html#values

id	
measurement_id	
timestamp	
int_x	Acceleration minus Gx on the x-axis
int_y	Acceleration minus Gy on the y-axis
int_z	Acceleration minus Gz on the z-axis

app

id	
measurement_id	
timestamp	
uid	user id assigned to the App in Android, but not the id of the phone. http://developer.android.com/reference/android/content/pm/ApplicationInfo.html#uid
label	display name of the app
packages	associated packages with that “uid”.
rx_traffic	received traffic volumn (Bytes) since last measurement
tx_traffic	sent traffic volumn (Bytes) since last measurement

battery

id	
measurement_id	
timestamp	
level	battery level in percentage
status	recharge status http://developer.android.com/reference/android/os/BatteryManager.html

Bluetooth

http://developer.android.com/reference/android/bluetooth/BluetoothDevice.html

id	
measurement_id	
timestamp	
name	friendly Bluetooth name of the remote device
mac_address	hardware address of this BluetoothDevice.
bond_state	the bond state of the remote device
device_type	the Bluetooth device type of the remote device
rssi	received signal strength indicator

connectivity

id	
measurement_id	
timestamp	

type	0 - cellular; 1 - WiFi
state	http://developer.android.com/reference/android/net/NetworkInfo.html#getDetailedState%28%29
ssid	when current connection is Wi-Fi, stores the SSID; otherwise, it is an empty string ""
mac_address	This phone's MAC Address in current connection

history

id	
measurement_id	
timestamp	
title	visited webpage title
url	visited url

ip

id	
measurement_id	
timestamp	
ipv4	IPv4 address
ipv6	IPv6 address

location

id	
measurement_id	
timestamp	
provider	Source of this location measurement

	http://developer.android.com/reference/android/location/Location.html#getProvider%28%29
accuracy	accuracy in meters
lat	latitude
lon	longitude

memory

http://developer.android.com/reference/android/os/StatFs.html

id	
measurement_id	
timestamp	
free_memory	available filesystem space
total_memory	total filesystem space

network

http://developer.android.com/reference/android/telephony/CellLocation.html
http://developer.android.com/reference/android/telephony/gsm/GsmCellLocation.html
http://developer.android.com/reference/android/telephony/cdma/CdmaCellLocation.html

id	
measurement_id	
timestamp	
type	Network type, we adopt the same value as in Android document: http://developer.android.com/reference/android/telephony/TelephonyManager.html#getNetworkType%28%29
base_stationid	see above links for explanations of the rest fields

lat	latitude of basestation
lon	longitude of basestation
cid	
is_registered	
lac	
mcc	
networkid	
pci	
psc	
signal_strength	
snr	
systemid	
tac	
timing_advance	

proximity

proximity between the phone and the user's face

id	
measurement_id	
timestamp	
is_near	determine when a handset is being held close to a user's face. 1 near; 0 far

running_app

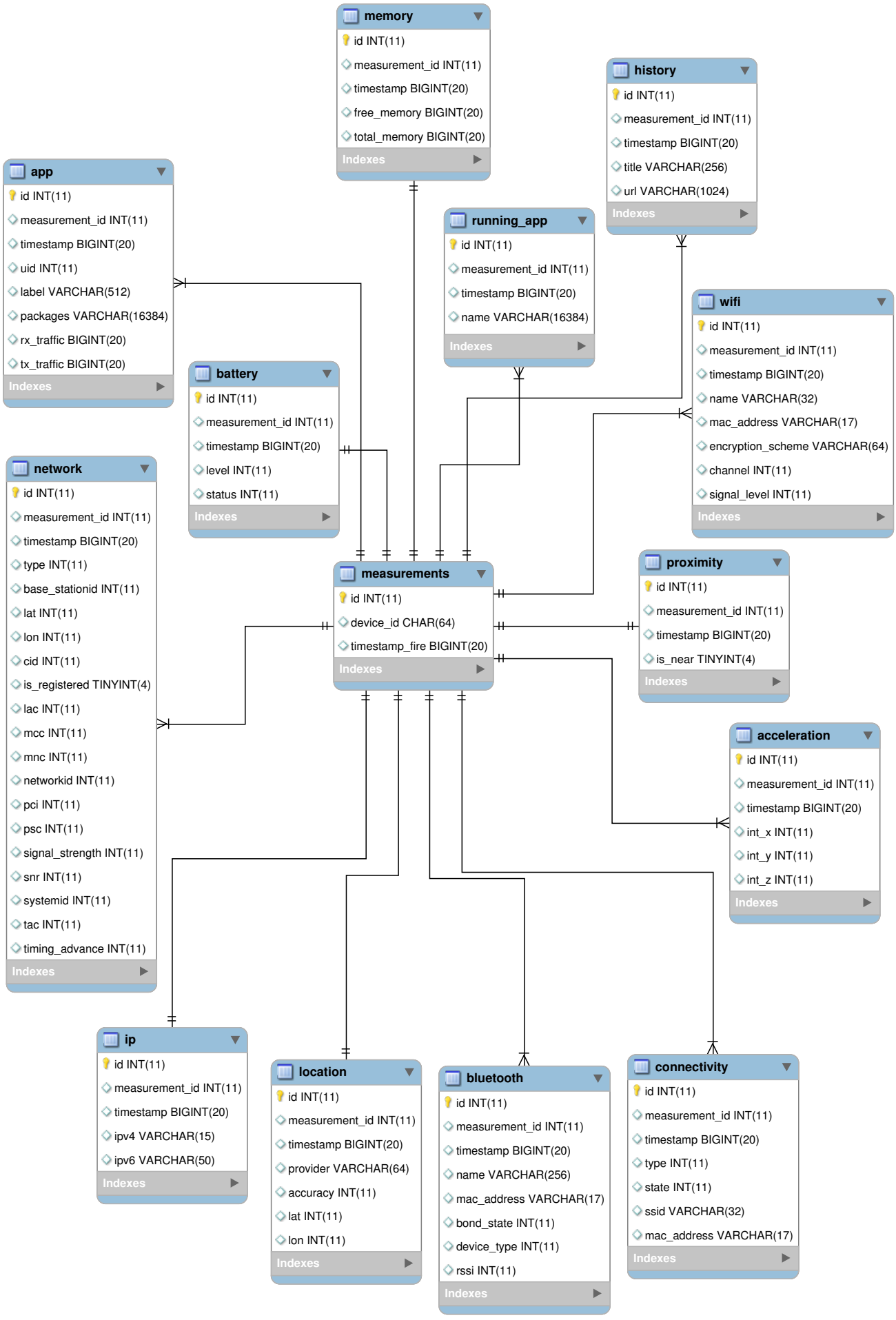
apps those are running on the phone, exactly when the measurement is taking place

id	
measurement_id	
timestamp	
name	name of running process

wifi

scan result of neary Wi-Fi Access Points
http://developer.android.com/reference/android/net/wifi/ScanResult.html

id	
measurement_id	
timestamp	
name	
mac_address	This field is used to store the address of the access point (BSSID). It is named “mac_address” for historic reason. http://developer.android.com/reference/android/net/wifi/ScanResult.html#BSSID
encryption_scheme	Describes the authentication, key management, and encryption schemes supported by the access point. http://developer.android.com/reference/android/net/wifi/ScanResult.html#capabilities
channel	The primary 20 MHz frequency (in MHz) of the channel over which the client is communicating with the access point. http://developer.android.com/reference/android/net/wifi/ScanResult.html#frequency
signal_level	The detected signal level in dBm, also known as the RSSI http://developer.android.com/reference/android/net/wifi/ScanResult.html#level


memory
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
free_memory BIGINT(20)
total_memory BIGINT(20)
Indexes
history
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
title VARCHAR(256)
url VARCHAR(1024)
Indexes
app
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
uid INT(11)
label VARCHAR(512)
packages VARCHAR(16384)
rx_traffic BIGINT(20)
tx_traffic BIGINT(20)
Indexes
running_app
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
name VARCHAR(16384)
Indexes
wifi
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
name VARCHAR(32)
mac_address VARCHAR(17)
encryption_scheme VARCHAR(64)
channel INT(11)
signal_level INT(11)
Indexes
battery
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
level INT(11)
status INT(11)
Indexes
network
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
type INT(11)
base_stationid INT(11)
lat INT(11)
lon INT(11)
cid INT(11)
is_registered TINYINT(4)
lac INT(11)
mcc INT(11)
mnc INT(11)
networkid INT(11)
pci INT(11)
psc INT(11)
signal_strength INT(11)
snr INT(11)
systemid INT(11)
tac INT(11)
timing_advance INT(11)
Indexes
measurements
id INT(11)
device_id CHAR(64)
timestamp_fire BIGINT(20)
Indexes
proximity
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
is_near TINYINT(4)
Indexes
acceleration
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
int_x INT(11)
int_y INT(11)
int_z INT(11)
Indexes
ip
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
ipv4 VARCHAR(15)
ipv6 VARCHAR(50)
Indexes
location
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
provider VARCHAR(64)
accuracy INT(11)
lat INT(11)
lon INT(11)
Indexes
bluetooth
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
name VARCHAR(256)
mac_address VARCHAR(17)
bond_state INT(11)
device_type INT(11)
rssi INT(11)
Indexes
connectivity
id INT(11)
measurement_id INT(11)
timestamp BIGINT(20)
type INT(11)
state INT(11)
ssid VARCHAR(32)
mac_address VARCHAR(17)
Indexes