

# Android性能专项测试之Heap Snapshot工具

2015-10-09 17:25

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举报

分类：Android性能 ( 13 )

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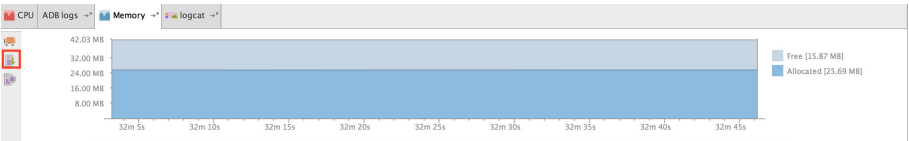
[+]

Speed up your app

## Heap Snapshot能做什么？

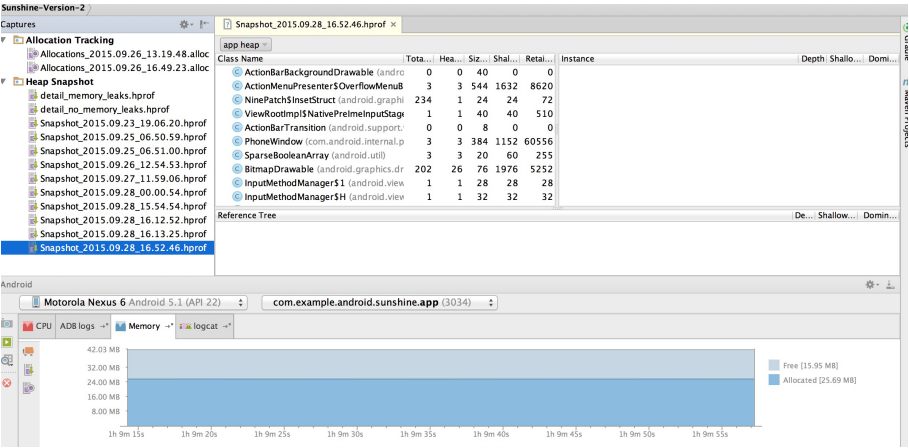
获取Java堆内存详细信息，可以分析出内存泄漏的问题

## Heap Dump启动

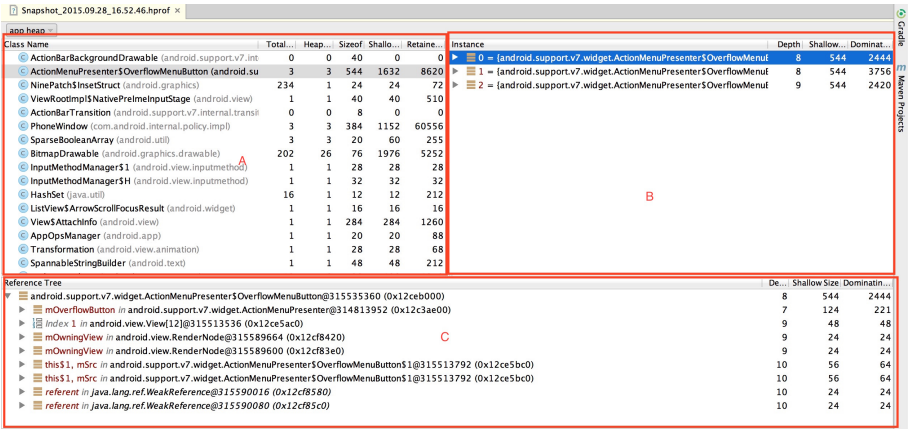


在内存面包中，点击图中红色标注的按钮，就会显示我们的Heap Snapshot面包

## Heap Snapshot面板



## Heap Snapshot详细信息面板



该面板里的信息可以有三种类型:app heap/image heap/zygote heap.

分别代表app 堆内存信息，图片堆内存信息，zygote进程的堆内存信息。

A区域

列举了堆内存中所有的类,一下是列表中列名:

名称	意义
Total Count	内存中该类的对象个数
Heap Count	堆内存中该类的对象个数
Sizeof	物理大小
Shallow size	该对象本身占有内存大小
Retained Size	释放该对象后，节省的内存大小

B区域

当我们点击某个类时，右边的B区域会显示该类的实例化对象，这里面会显示有多少个实体，以及详细信息。

名称	意义
depth	深度
Shallow Size	对象本身内存大小
Dominating Size	管辖的内存大小

当你点击某个对象时，将展开该对象内部含有哪些对象，同时C区域也会显示哪些对象引用了该对象:

app heap	Total Co...	Sizeof	Sh...	Retained Size	Instance	Depth	Shallow...	Dominating Size
DecorContentParent (android.support.v7.in...	0	0	8	0	0	4	324	77641
DecorToolBar (android.support.v7.internal...	0	0	8	0	0	3	324	77771
DefaultDatabaseErrorHandler (android.dat...	1	1	8	8	8			
DetailActivity (com.example.android.sunshir...	2	2	324	648	155412			
DetailFragment (com.example.android.suns...	2	2	260	520	41600			
Dex (com.android.dex)	8	1	44	44	864			
Dex\$FieldIdTable (com.android.dex)	8	1	16	16	16			
Reference Tree								
com.example.android.sunshine.app.DetailActivity@315362032 (0x12cc0af0)						4	324	77641
Index 1 in java.lang.Object[12]@315887296 (0x12d40ec0)						3	48	78801
mOuterContext in android.app.ContextImpl@316905088 (0x12e39680)						5	128	840
mContext, mFactory, mPrivateFactory in com.android.internal.policy.impl.PhoneLayoutInflater@316912016 (0x12...						5	40	48
mContext, mFactory, mPrivateFactory in com.android.internal.policy.impl.PhoneLayoutInflater@316912016 (0x12...						5	40	48
mContext, mFactory, mPrivateFactory in com.android.internal.policy.impl.PhoneLayoutInflater@316912016 (0x12...						5	40	48
mContext, mFactory, mPrivateFactory in com.android.internal.policy.impl.PhoneLayoutInflater@316912016 (0x12...						5	40	48
mCallback, mContext, mOnWindowDismissedCallback in com.android.internal.policy.impl.PhoneWindow@3152911...						5	384	20224

C区域

Reference Tree	Depth	Shallow...	Dominating...
com.example.android.sunshine.app.DetailActivity@315362032 (0x12cc0af0)	4	324	77641
Index 1 in java.lang.Object[12]@315887296 (0x12d40ec0)	3	48	78801
mOuterContext in android.app.ContextImpl@316905088 (0x12e39680)	5	128	840
mContext, mFactory, mPrivateFactory in com.android.internal.policy.impl.PhoneLayoutInflater@316912016 (0x12...	5	40	48
mContext, mFactory, mPrivateFactory in com.android.internal.policy.impl.PhoneLayoutInflater@316912016 (0x12...	5	40	48
mContext, mFactory, mPrivateFactory in com.android.internal.policy.impl.PhoneLayoutInflater@316912016 (0x12...	5	40	48
mContext, mFactory, mPrivateFactory in com.android.internal.policy.impl.PhoneLayoutInflater@316912016 (0x12...	5	40	48
mCallback, mContext, mOnWindowDismissedCallback in com.android.internal.policy.impl.PhoneWindow@3152911...	5	384	20224
mCallback, mContext, mOnWindowDismissedCallback in com.android.internal.policy.impl.PhoneWindow@3152911...	5	384	20224

比如在内存泄漏中，可以看出来它被谁引用，比如上图，引用树的第一行，可以看出来，该对象被Object[12]对象引用，索引值为1，那我们展开后，可以看到，该Object[12]是一个ArrayList。

Reference Tree	Depth	Shallow...	Dominating...
com.example.android.sunshine.app.DetailActivity@315362032 (0x12cc0af0)	4	324	77641
Index 1 in java.lang.Object[12]@315887296 (0x12d40ec0)	3	48	78801
array in java.util.ArrayList@315996064 (0x12d5b7a0)	2	20	78821
list in com.example.android.sunshine.app.sync.ActivityManager@315958688 (0x12d525a0)	1	12	78833
minstance in com.example.android.sunshine.app.sync.ActivityManager	0	116	78957

Android studio1.4的更新

1.4的面板有一些变化:

Snapshot_2015.10.09_17.15.29.hprof x						
app heap - Class List View						
Class Name	Total C...	Heap C...	Sizeof...	Retained Size	Instance	
FinalizerReference (java.lang.ref)	1872	530	36 15	25412184		
byte[]	2174	89	0 14	1404996		
ArtMethod (java.lang.reflect)	53571	2825	48 13	135600		
DexCache (java.lang)	15	1	40 4c	101134		
LinearLayout (android.widget)	25	25	616 15	100512		
Listview (android.widget)	1	1	1160 11	90079		
ArtMethod[] (java.lang.reflect)	8931	514	0 73	89068		
View[] (android.view)	45	45	0 2c	88788		
String[] (java.lang)	2051	7	0 54	57450		
ArtField[] (java.lang.reflect)	3230	165	0 28	49204		
TextView (android.widget)	32	32	728 23	44088		
String (java.lang)	46942	652	24 15	43296		
ArtField (java.lang.reflect)	32184	1573	24 37	37752		
Object[] (java.lang)	2623	247	0 83	32212		
char[]	9915	646	0 3c	30488		
PhoneWindow (com.android.internal.policy.impl)	1	1	384 38	20180		
int[]	2714	216	0 18	18416		
ArrayList (java.util)	890	128	20 25	14356		
TypedArray (android.content.res)	9	4	48 15	13652		
TransitionSet (android.transition)	4	2	164 32	9664		
FrameLayout (android.widget)	9	9	620 55	8312		
ImageView (android.widget)	9	9	532 47	8280		

较之前添加了一个数据显示方式的选择，可以选择类名排列或者包名排列：

Sunshine-Version-2

Snapshot\_2015.10.09\_17.15.29.hprof x

app heap - Package Tree View

Class Name	Total C...	Heap C...	Sizeof...	Retained Size	Instance	De...	Shall...
String (java.lang)	46942	652	24 15	43296	0 = (com.example.android.sunshine.app.d...	1	6
ArtField (java.lang.reflect)	32184	1573	24 37	37752			
Object[] (java.lang)	2623	247	0 83	32212			
char[]	9915	646	0 3c	30488			
char[]	9915	646	0 3c	30488			
com	261	72	35	30154			
android	247	58	26	27324			
example	14	14	94	2830			
android	14	14	94	2830			
sunshine	14	14	94	2830			
app	14	14	94	2830			
MainActivity (com.example.android.sunshine.ap	1	1	332 33	1954			
ForecastFragment (com.example.android.sunsh	1	1	228 22	352			
ForecastAdapter\$ViewHolder (com.example.an	8	8	28 22	224			
data	2	2	1c	156			
ForecastAdapter (com.example.android.sunshir	1	1	52 52	132			
ForecastFragment\$1 (com.example.android.sur	1	1	12 12	12			
Utility (com.example.android.sunshine.app)	0	0	8 0	0			
sync	0	0	0	0			
ForecastFragment\$Callback (com.example.and	0	0	8 0	0			
PhoneWindow (com.android.internal.policy.impl)	1	1	384 38	20180			
int[]	2714	216	0 18	18416			

Reference Tree

com.example.android.sunshine.app.data.WeatherProvider@315156672 (0x12c8e8c0)

this\$0 in android.content.ContentProvider\$Transport@315042496 (0x12c72ac0)

mLocalProvider in android.app.ActivityThread\$ProviderClientRecord@315161792 (0x12c8fcc0)

Terminal Android Monitor TODO

Event Log Gradle