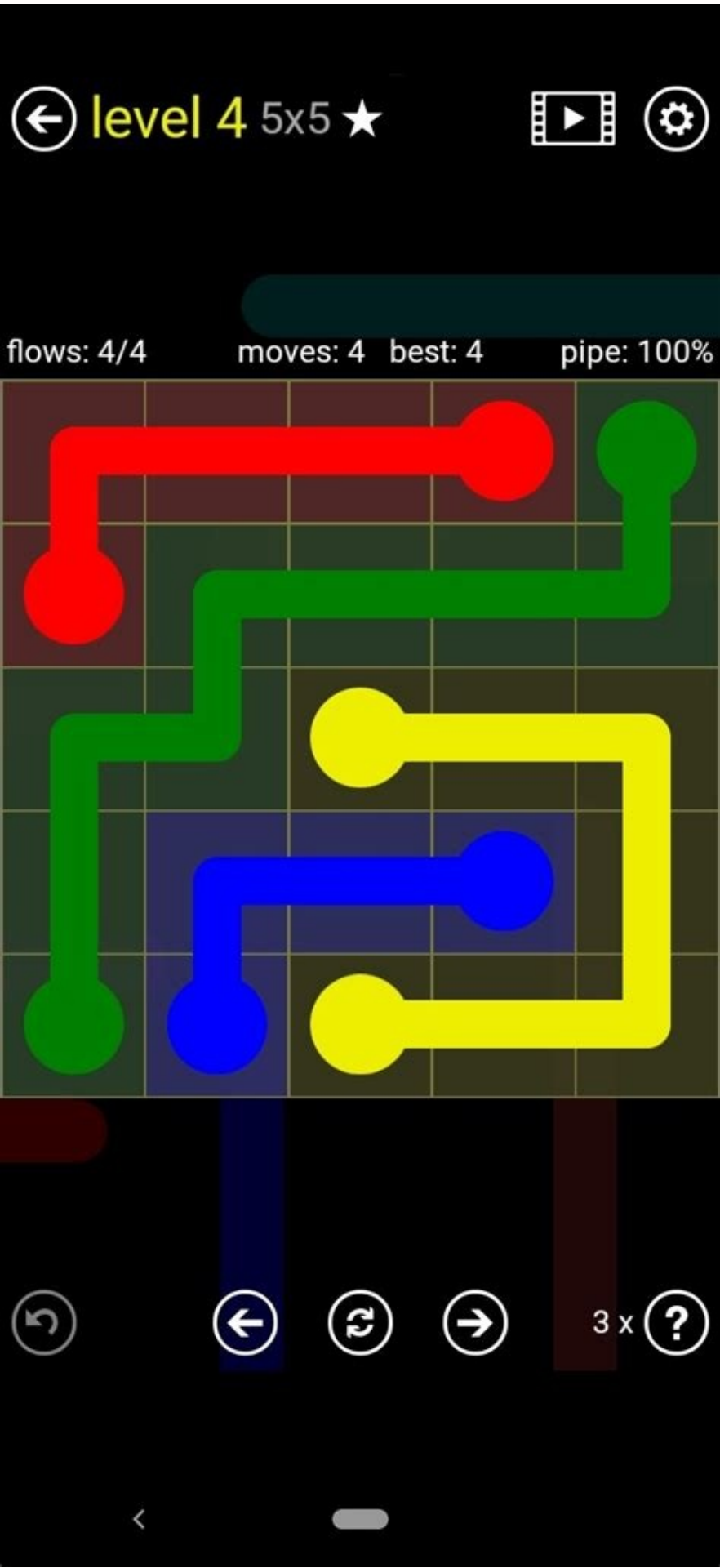
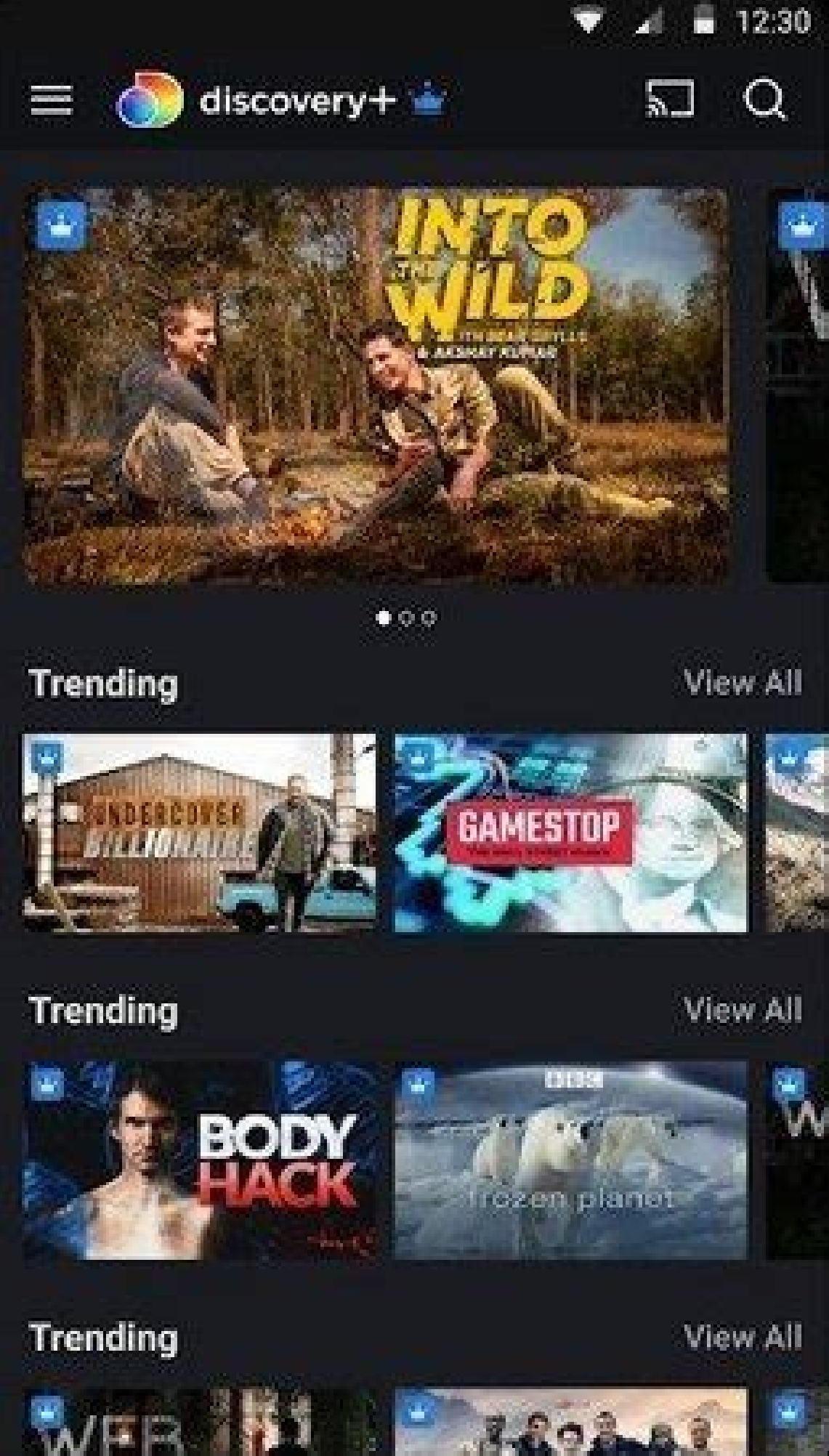


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When Google announced Android N, they showed off split-screen multitasking, which lets you use multiple apps at once on the same screen. That was kinda neat, but buried beneath the surface, though, is something even cooler: Freeform windows. Here's what it looks like in action, and how to try it out yourself. Freeform Windows Will Transform the Way Android Works

Google has been working on multitasking in Android for a long time. Last year, when Google released the Android M developer preview, there was a hidden split screen feature buried inside that never made it to the full, final release. Then it became official once the Android N preview came out. Now, developers and tinkerers playing with the Android N preview have found the next evolution of multitasking hiding inside: It's called Freeform windows. To launch an app in Freeform mode, you press the square Recents button. This will open your usual, Rolodex-style multitasking menu. In the title bar for each app, there's a small square icon with another square inside it. When you tap this, it opens the app in the Freeform workspace. The Freeform workspace is a dedicated desktop where you can open and resize as many apps as you want. You can drag windows by the edges or corners to resize them to any arbitrary size, just like all the desktop operating systems you're used to. Just don't completely cover another app. Freeform mode lacks any form of task bar or app switching, so it's easy to lose a window. As long as you're in the Freeform mode, any apps you launch will pop up as windowed apps. However, that's a little hard to do, since there's no app launcher in Freeform mode. If you open an app from within another app (for example, you can open Settings from the notification shade), it will launch in windowed mode. However, if you press the Home button and open an app from the regular launcher, it will open in the normal fullscreen mode. When you leave Freeform mode, the workspace and all the windows inside are saved in their last state until you come back. For example, you can tap the Home button, open another app and use it in fullscreen mode like normal, and then tap the Recents button to get back into Freeform mode. This approach seems a little weird at first. It's unclear how finished this feature is or even when it will be released. According to Google's developer documentation, manufacturers of Android N devices can choose whether to enable Freeform support. This may mean that Android N devices will launch with Freeform support, but given how unfinished this feature is, that seems unlikely any time soon. Then again, there are still a few months before Google I/O. Maybe we'll be surprised.

How to Try It Out For Yourself

At this point, you probably want to try this out for yourself, and I can't blame you. Freeform windows on Android are already pretty awesome. On a proper large screen device, they could change the way you use Android. For now, though, they're a hidden, experimental feature inside an unfinished developer preview for an unreleased operating system. Trying this out will not be easy, it's not safe, and it's probably half-broken. If you're still with me, here's how to try out Freeform mode for yourself.

Option #1: Try It Out In an Emulator

The easiest option, by far, is to use the emulator built in to Android Studio. If you don't have Android Studio installed, check out our guide on getting started as an Android developer for instructions. You'll also need to make sure you've downloaded the Android N SDK components. If any of that sounds too intimidating, you probably shouldn't try this. Once you have all those parts, you'll need to create an Android Virtual Device running the Android N developer preview. Here's how to create the AVD you'll need:

In Android Studio, open the AVD Manager. Click Create Virtual Device. Choose a preset profile that's compatible with Android N. I used the Nexus 9, since it offers the most free space for resizing windows. Click Next. On the System Image screen, click "Show downloadable system images." Choose the N release labeled "x86" under ABI. This may take a while to download. When it's finished, choose this system image and click Next. Choose "Landscape" next to orientation. This isn't technically necessary, but I find it's easier to launch into landscape mode by default when you're messing with windows. The rest of the default options should be fine. Click Finish to create your AVD. Once this is finished, start up your AVD. You'll then need to do some tweaking to get Freeform working in the emulator. For this, you'll need to use ADB. Open a command prompt and follow these steps:

```
Enter adb shell
Enter su
Enter setenforce 0
Enter settings put global enable_freeform_support 1
Enter cd /data/local/tmp
Enter mkdir permissions
Enter cd permissions
Enter cp -a /system/etc/permissions/* ./
Enter sed -e "s/live_wallpaper/freeform_window_management/" android.software.live_wallpaper.xml >freeform.xml
Enter mount --bind . /system/etc/permissions
Wait for a couple seconds
Enter stop
Wait a couple more seconds
Enter start
```

After this, your emulator will reboot and you can start playing with Freeform windows.

Option #2: Enable Freeform On Your Nexus Device

Trying out Freeform mode on your phone or tablet is likely a riskier affair than using the emulator. If you're enrolled in the Android Beta program, it will probably screw up any future OTA updates Google rolls out. You probably won't brick your device, but it will be a pain to reflash it back to stock, just to re-enroll in the Beta. At the very least, backing up your device couldn't hurt. If you're really sure you want to try this, continue.

First, you'll need to install a custom recovery like TWRP. Once you've done that, follow these steps:

Boot into your custom recovery. Mount the system as read-write. Open an ADB shell. Enter `cd /system/etc/permissions`. Enter `sed -e "s/live_wallpaper/freeform_window_management/" android.software.live_wallpaper.xml >freeform.xml`. Reboot into Android and open another ADB shell. Enter `settings put global enable_freeform_support 1`. Reboot your device again. You can find more information about these instructions at Android Police here.

If there are any commands here you don't understand, be sure to research them first. If you're not sure where to start, the XDA forums are an excellent resource. So far, Freeform is pretty buggy, but it shows lots of promise, and a promising future for Android. So far, Google's only entry into the laptop world is Chrome OS, which is relatively limited compared to Android. If Freeform lets developers release their Android apps into the world of traditional windowed operating systems, we might be able to see Android evolve into a desktop operating system you might see on your laptop as well as your phone someday. For now, it's just fun to play with the toys Google will release in the future.

Microsoft distributes special "N" editions of Windows in Europe and "KN" editions of Windows in Korea. These are the same as the standard editions of Windows, except they don't include Windows Media Player and other multimedia playback features. How Are "N" and "KN" Editions Different? "N" editions of Windows are available in Europe, and are missing a few media-related features. On Windows 7, you'll find that Windows Media Player and Windows Media Center are missing. On Windows 10, they don't include Windows Media Player, Groove Music, Movies & TV, Voice Recorder, or Skype. "KN" editions of Windows are available in Korea. They remove Windows Media Player and related multimedia features, just like Windows N. When the KN versions of Windows were created, they also removed Windows Messenger. However, Microsoft has since discontinued this application. You don't have to buy an N or KN edition of Windows, even if you live in these areas. Standard editions of Windows are also available for purchase. There isn't just one "N" edition of Windows, either. Instead, there are "N" versions of most Windows editions. For example, if you want to buy Windows 10, you can get Windows 10 Home N or Windows 10 Professional N. These are identical to the standard Home and Professional editions of Windows with all the same features, except they exclude the multimedia features mentioned above. These editions of Windows exist entirely for legal reasons. In 2004, the European Commission found Microsoft had violated European antitrust law, abusing its monopoly in the market to hurt competing video and audio applications. The EU fined Microsoft €500 million and required Microsoft to offer a version of Windows without Windows Media Player. Consumers and PC manufacturers can choose this version of Windows and install their preferred multimedia applications without Windows Media Player also being present. It's not the only version of Windows offered in the European Union—it's just an option that has to be available. This is why the "N" editions are only available in Europe. Similarly, in 2005, the Korea Fair Trade Commission found Microsoft was abusing its monopoly position to hurt competing multimedia and messaging apps. It fined Microsoft \$32 million and required Microsoft to offer a version of Windows without Windows Media Player and MSN Messenger. This is why those "KN" editions of Windows are available in Korea. Quite a Few Things Will Break Unfortunately, it's not as simple as just removing Windows Media Player. The removal of underlying multimedia codecs and playback features means quite a few applications won't work properly. Many apps, from Microsoft Office to some PC games, rely on the built-in Windows video playback features. These features may not function properly in such applications, or the applications may crash completely. On Windows 10, Cortana, Windows Hello, and PDF viewing in Edge won't work. Multimedia features in Store apps may not work. Microsoft's website offers a detailed (but not complete) list of disabled features. Microsoft's Free Media Feature Pack Restores These Applications "N" and "KN" editions of Windows aren't prevented from using these media playback features. Instead, they're just not installed by default. If you want to enable these disabled multimedia features on a N or KN edition of Windows, download the free Media Feature Pack from Microsoft. There are different download links depending on whether you need it for Windows 10, Windows 8, or Windows 7. This will re-enable all those disabled features. Should I Buy Them? Let's be honest: These editions of Windows have largely been a flop. In theory, they were created to increase choice for consumers and PC manufacturers. Rather than being forced to use Windows Media Player, users could avoid it entirely and install their own preferred applications. PC manufacturers could choose the media player software they preferred, and media player companies could better compete without Microsoft getting in the way. But these versions of Windows haven't been very popular. They're still not that common, so some third-party applications may not work properly if they assume these multimedia features are always present and rely on them. And Microsoft keeps adding new features to Windows 10 that won't work properly on these editions of Windows unless you install the missing multimedia features. RealPlayer creator RealNetworks cheered the EU decision, but RealPlayer didn't become popular in response. It's even hard to argue Microsoft is benefiting from these preinstalled apps—today, Microsoft is far behind competing services like Spotify and iTunes when it comes to music, and Skype is getting a run for its money from the many competing messaging services out there, from Facebook Messenger to iMessage and FaceTime. If you have a choice, we recommend you avoid these editions of Windows. Of course, if you have an N or KN edition, it's not a big problem—you can just download the free Media Feature Pack.



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