№2-amaliyot ishi

Smartfonlar uchun Android OTda ilovalarni ishlab chiqishga kirish

1. Ishdan maqsad

ADT Bundle dasturlash muhitini o‘rnatish va sozlash

2. Topshiriq

1. ADT dasturlash muhitini o‘rnatish va sozlash;
2. Birinchi **Hello, world !** ilovasini yaratish;
3. Ilovani mobil qurilmaning emulyatorida ishga tushirish.

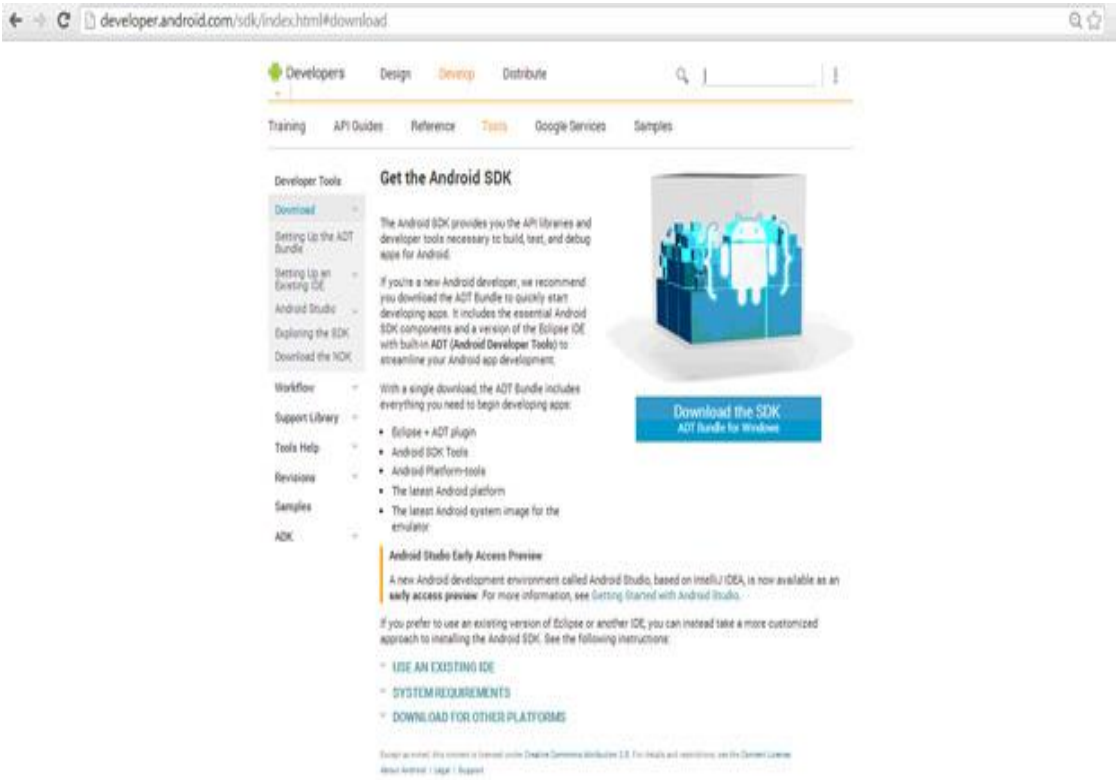
3. Amaliyot ishini bajarishga ko‘rsatmalar

Muhitni o‘rnatish

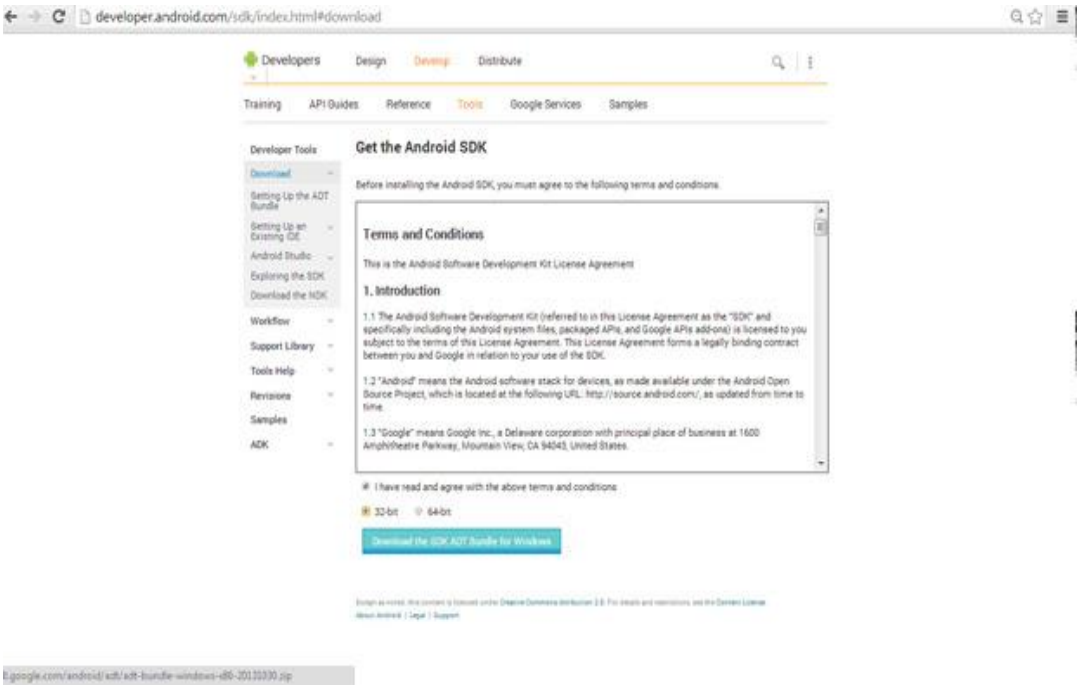
Amaliyot ishi *ADT Bundle* (*Android IDE*) muhitida ishlashni tavsiflashga bag‘ishlangan. Amaliyot ishida rasmiy saytlardan ko‘chirib olinishi zarur bo‘ladigan dasturiy ta’minot, uni o‘rnatish va sozlash, emulyator va mobil qurilamada eng oddiy ilovani yaratish va ishga tushirish haqida aytiladi. Qurilmada sozlash qator qiyinchiliklarga bog‘liqligi tufayli qurilmalar va *Windows* operatsion tizimini (7-versiyadan past emas) sozlash bo‘yicha batafsil qo’llanmakeltiriladi.

Android OS uchun ko‘plab ilovalar *Java* tilida yozilgan. Engommaviy ishlab chiqish muhitlaridan biri o‘rnatilgan *ADT* plaginli Eclipse (uning uchun *JDK* ham zarur) va *Android SDK* hisoblanadi. oldin barcha komponentlarni alohida o‘rnatishga to‘g‘ri kelgan. Hozirda *ADT Bundle* sozlangan to‘ldirishlarli Eclipse

muhitining yangi versiyasi paydo bo‘ldi. Bu erda ilovalarni ishlab chiqishuchun zarur bo‘ladigan *minimum* instrumentlar mavjud. Bu versiya bilan biz ishlaymiz. Lekin unda hamma narsalar ham mavjud emas, shuning uchun, agar qandaydir loyihani ishlab chiqishda sizga *ADT Bundle*ga kirmaydigan instrumentlar kerak bo‘lsa, siz ularni ishlab chiquvchilar saytidan ko‘chirib olishingiz va o‘z muhitingizni to‘ldirishingiz mumkin.



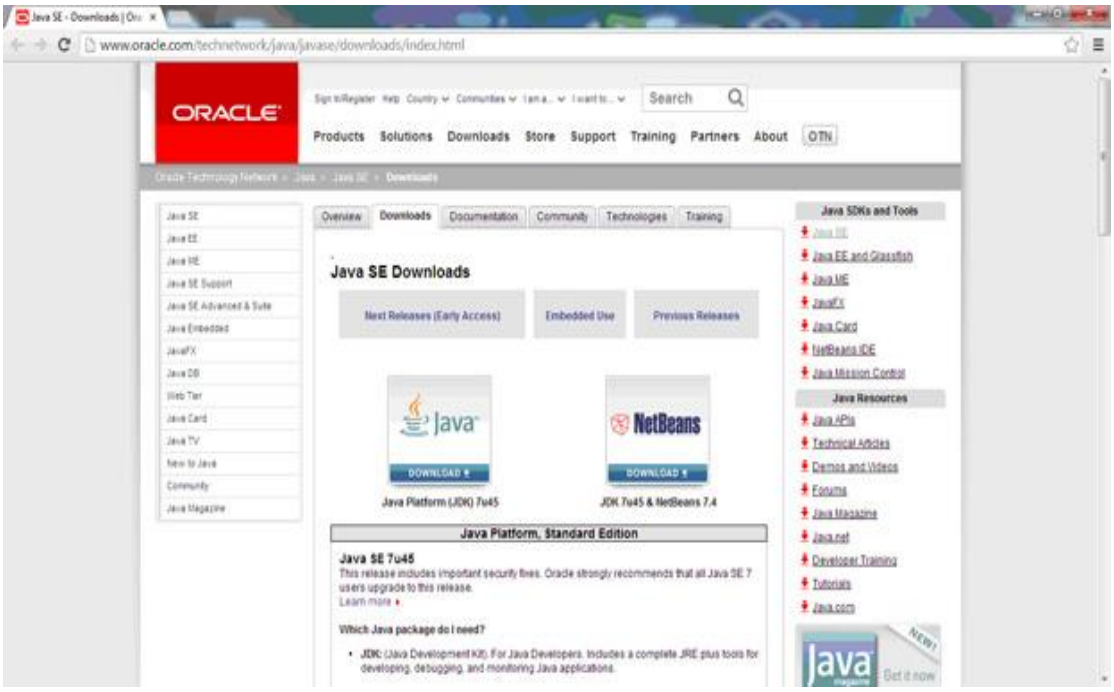
2.1-rasm. Ishlab chiquvchi sayti



2.2-rasm. Muhitni ko‘chirib olish

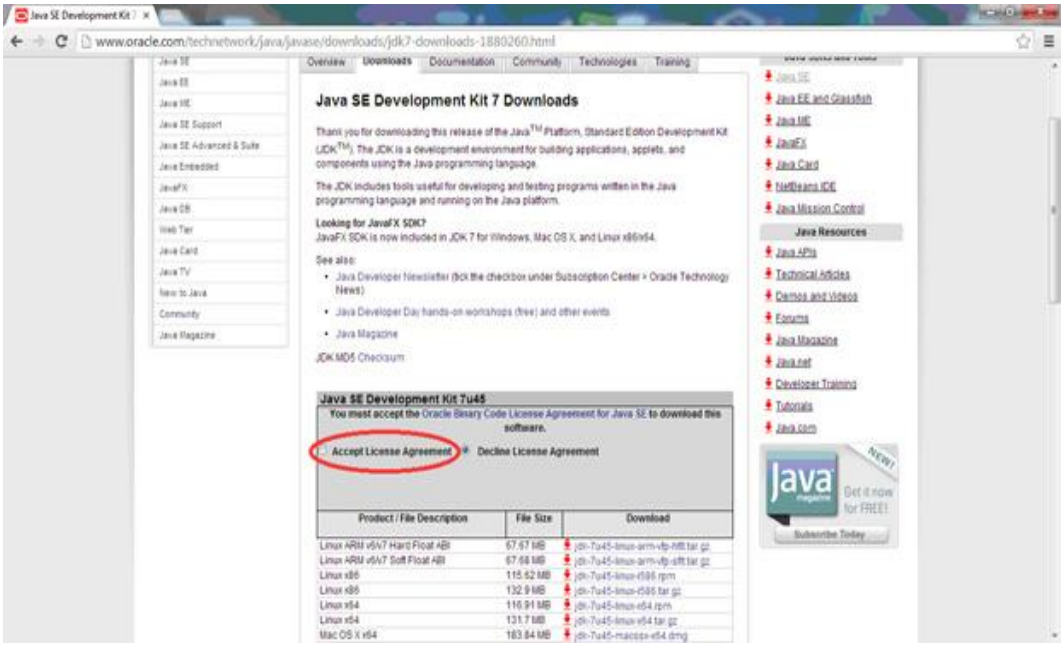
Muhitni ko‘chirib olish uchun litsenzion kelishuv shartlarini qabul qilish va sizning *Windows* (32-bit yoki *64-bit*) versiyangizni tanlash kerak.

Ko‘chirib olishdan keyin *arxiv*ni ishlash kerak bo‘lgan jildda oching (muhit maxsus o‘rnatishni talab qilmaydi). Ochishdan keyin jildga kiring va Eclipseni ishga tushiring. Bu erda uncha katta bo‘lmagan muammo bo‘lishi mumkin. Agar sizda *JDK* o‘rnatilmagan bo‘lsa, muhit ishga tushmaydi va *JDK* bo‘lgan jildga *yo‘lni* ko‘rsatilishini yoki uni o‘rnatilishini talab qiladi.



2.3-rasm. Oracle kompaniyasining sayti

*JDK*ni ko‘chirib olish uchun dastlab litsenzion kelishuv shartini qabul qilish va keyin kerakli versiyani tanlash kerak.

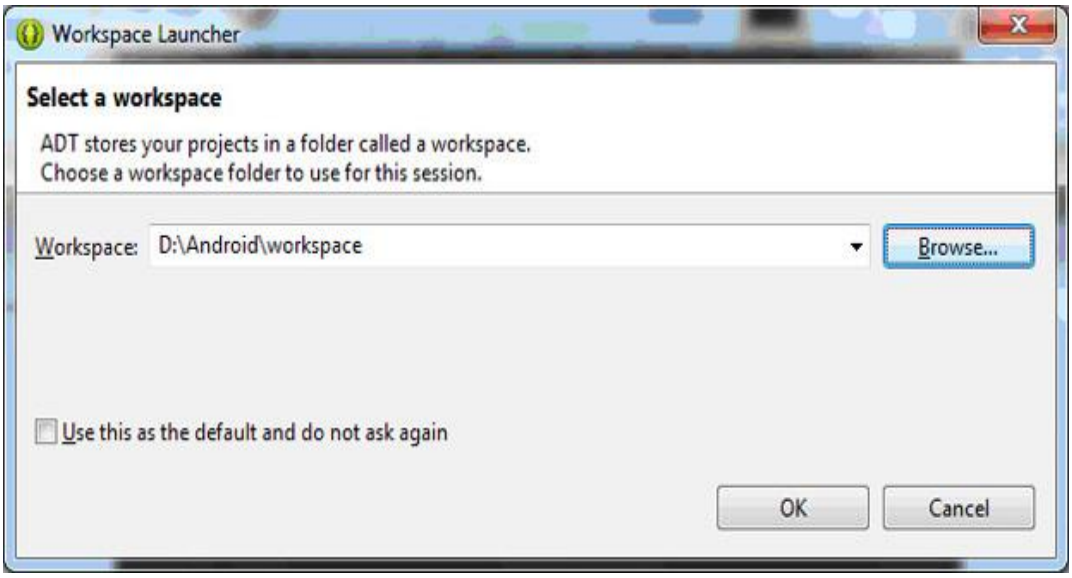


2.4-rasm. JDKni ko‘chirib olish

Ko‘chirib olishdan keyin setup-*fayl*ni ishga tushiring va *JDK*ni o‘rnating.

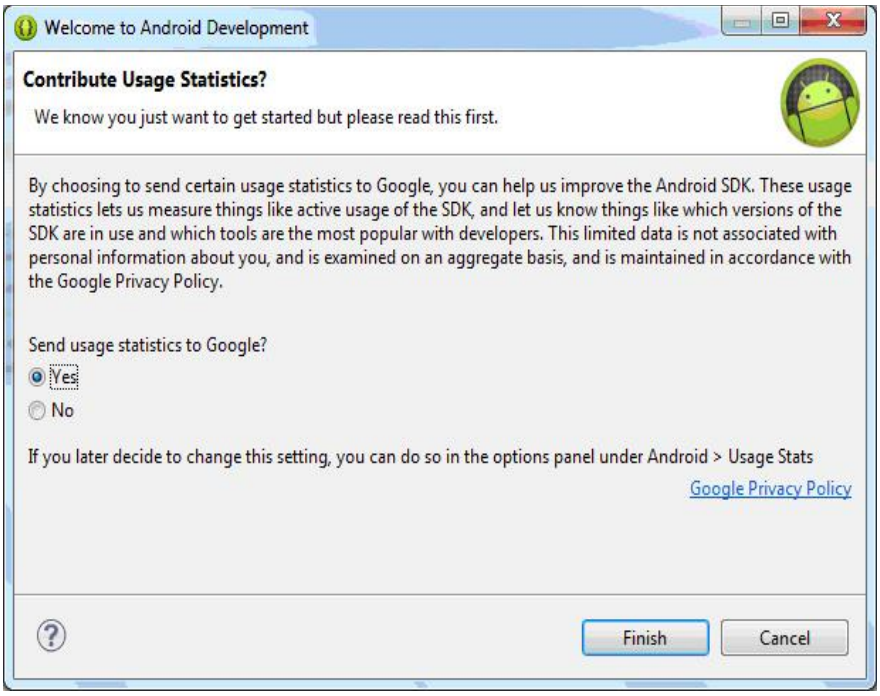
2.5-rasm. JDKni o‘rnatish

JDK o‘rnatilganidan keyin muhit ishga tushishi kerak. Keyin ish makonini, ya’ni sizning loyihalaringiz joylashadigan *joyni* tanlash (yoki yangisini yaratish) kerak bo‘ladi. Agar belgilansa, u holda bu ish *makoni* yashirish bo‘yicha tanalanadi, aks holda bu oyna Eclipseni har bir ishga tushirilishida paydo bo‘ladi.



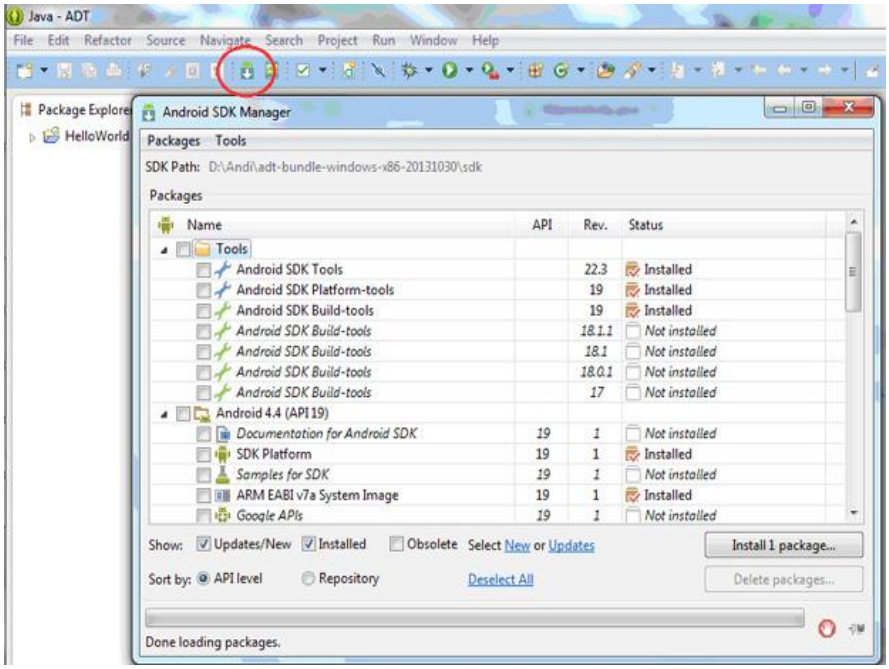
2.6-rasm. Ish makonini tanlash

Keyin ishlab chiquvchilar *SDK*ni keyingi yaxshilash uchun statistikani jo‘natishni taklif etadigan oyna paydo bo‘ladi. siz rozilik berishingiz yoki rad etishingiz mumkin.



2.7-rasm. Statistikani jo‘natish

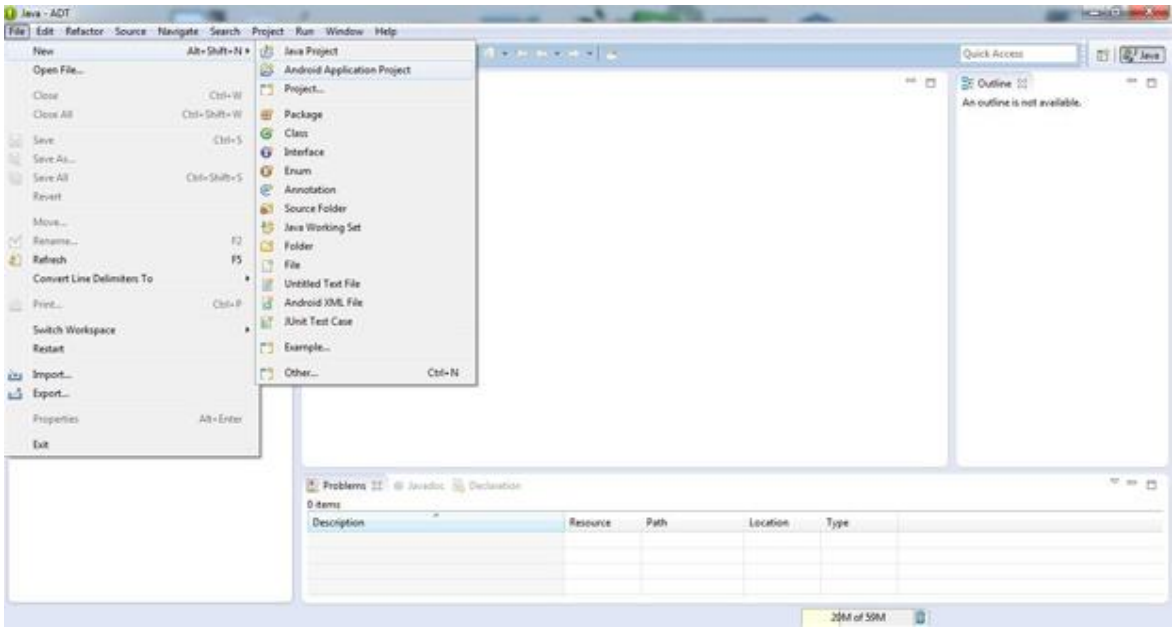
Instrumentlar panelida joylashgan *Android SDK Manager*belgisiga e’tibor bering (uni shuningdek Window *menyu*dan topish mumkin). Uning yordamida siz o‘z muhitingizga yangi instrumentlarni qo‘shishingiz mumkin.



2.8-rasm. Android SDK Manager

4. Loyihani yaratish

Loyihani yaratish uchun **File→New→Android Application Project** *menyu*siga kiring.



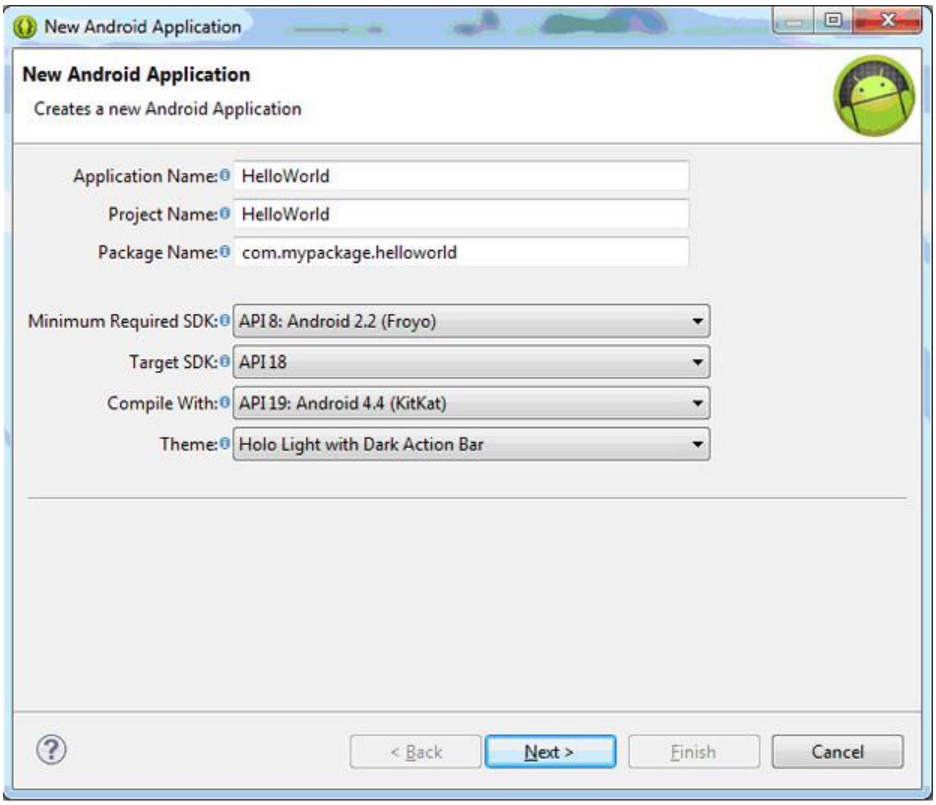
2.9-rasm. Loyihani yaratish

Paydo bo‘lgan oynada ilovaning nomi, loyihaning nomi, shuningdek *paketning* (*package*) nomini yozish shart. Uni *example* nomi bilan qoldirish kerak emas, chunki bunday nomli paketni Google *Play*da joylashtirish mumkin emas. Albatta, o‘quv ilovalari u erga joylashtirilmaydi, ammo buni kelajakda nazarda tutish krak.

Minimum Required SDK – ilova qo‘llaydigan *Android* minimal versiyasi hisoblanadi. Ko‘pincha yashirish bo‘yicha iloji boricha ko‘p qurilmalarni qo‘llash uchun 2.2-versiya ko‘rsatiladi. Agar sizning ilovangizning ma’lum funksiyasi faqat yangi *Android* versiyalarida ishlasa va bu ilovaning asosiy funksiyalari to‘plami uchun chegaraviy hisoblanmasa, siz uni qo‘llaydigan versiyalarda opsiya sifatida kiritishingiz mumkin.

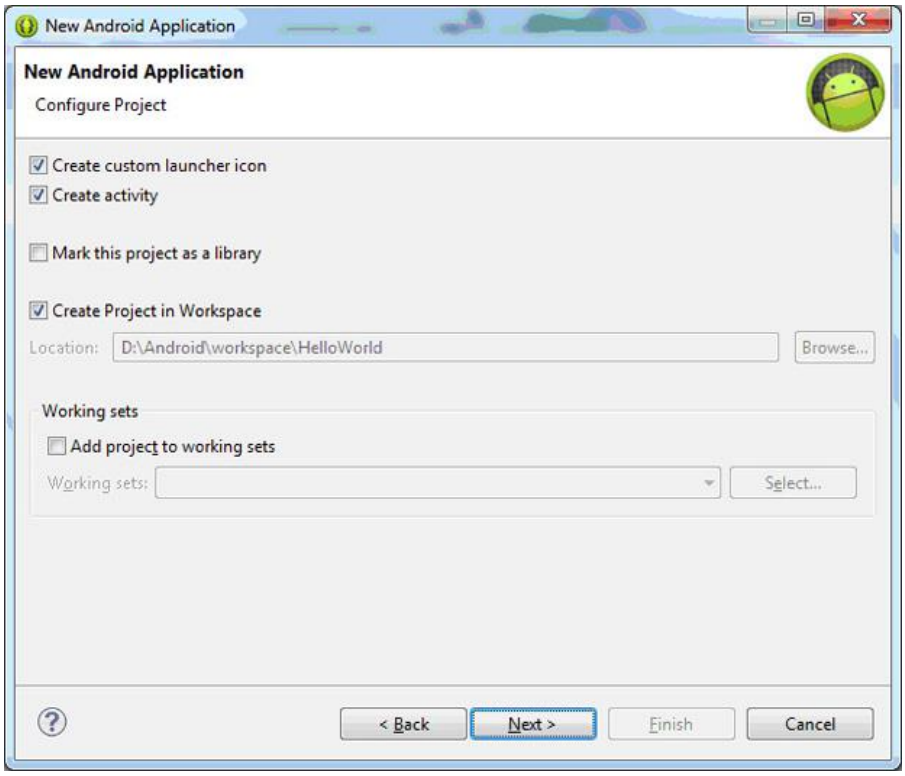
Target SDK – sizning *ilovangiz* yoziladigan *Android* versiyasi, siz ilovani testlagan maksimal *Android* versiyasini aniqlaydi. Bu moslashuvchanlik rejimlari uchun kerak.

Compile With *ilova* qanday *Android* versiyasining imkoniyatlarini ishlatishini aniqlaydi. Hozircha bu loyiha uchun qiymatlar sifatida yashirish bo‘yicha berilgan o‘rnatishlarni qoldiring.



2.10-rasm. Loyihaning nomi

Keyingi oynani o‘zgartirishsiz qoldirish mumkin.



2.11-rasm. Loyihaning konfiguratsiyasi

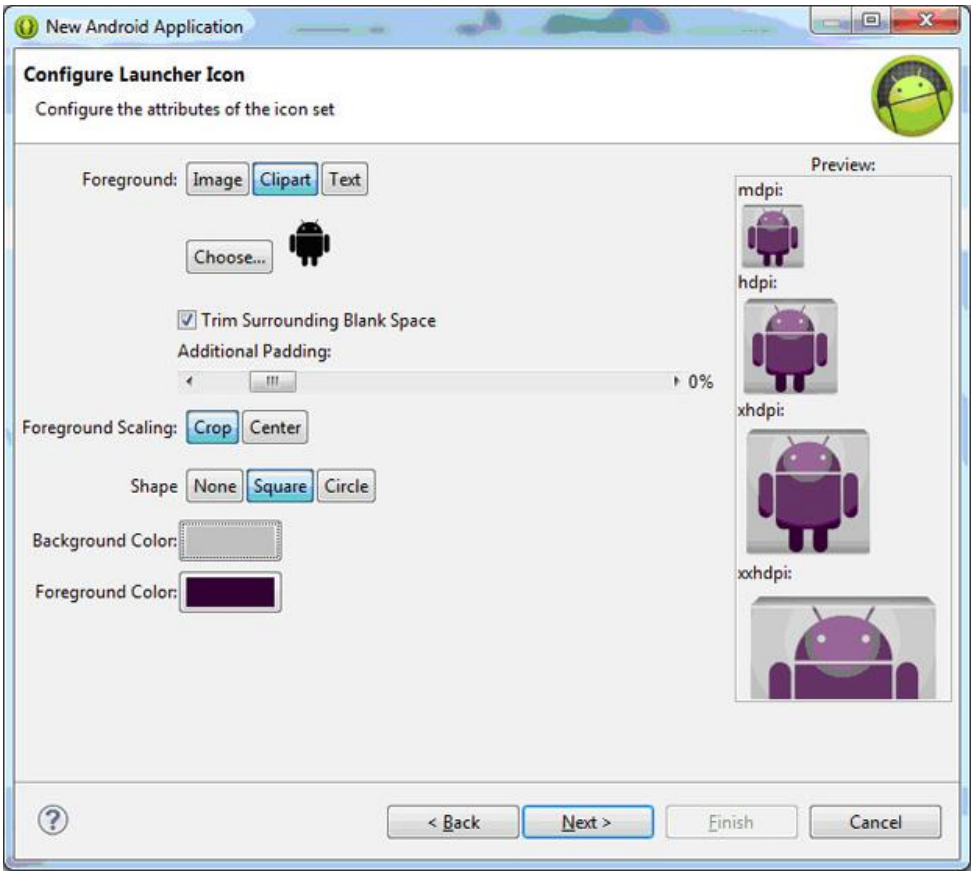
Create custom launcher icon – ilovaning belgisini yaratish.

Create activity –*Activity*ni (*aktivlik*, *faoliyat*) yaratish.

Mark this project as library – loyihani kutubxona sifatida yaratish. Hozir buning zarurati yo‘q, bizning *ilova* boshqa loyihalarda ishlatilmaydi.

Create Project in Workspace – Workspace jildida loyihani yaratish. Bu jildda bizni barcha loyihalarimiz saqlanadi.

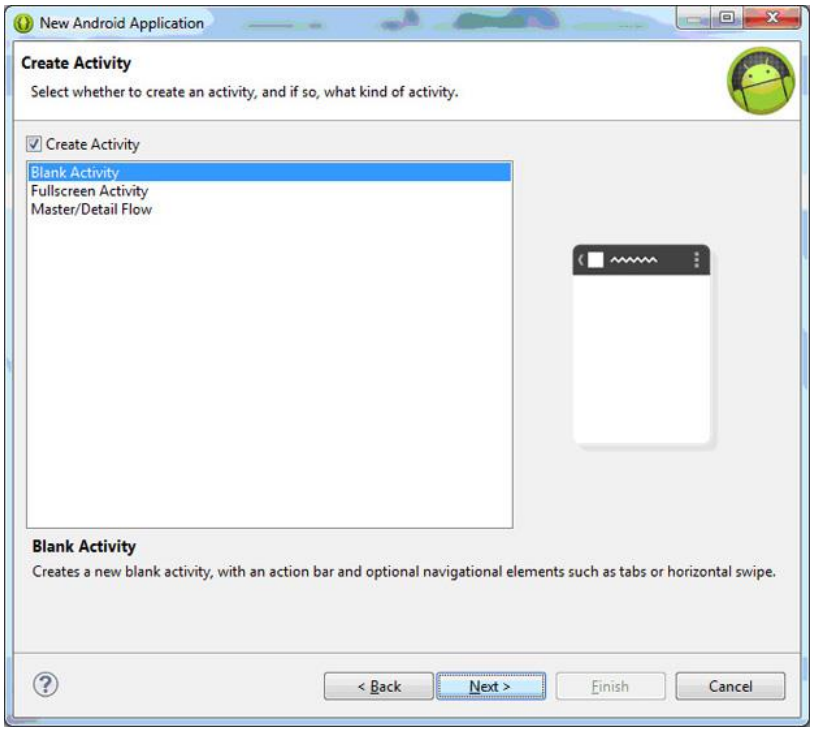
Keyingi bosqich – belgini (ikonkani) yaratish. Standart belgini qoldirish yoki yangi o‘z belgingizni yaratish mumkin. Bizning misolda rang gammasi, shakl o‘zgartirilgan, shuningdek klipartdan figura tanlangan.



2.12-rasm. Ilovaning belgisini yaratish

*Android*dagi ko‘plab ilovalar aktivlik yoki faoliyat (*Activity*) deyiladigan o‘z ekraniga (shakliga, oynasiga) ega.

Navbatdagi ikkita oyna bo‘sh aktivlikni yaratadi. Birinchisida hozircha hech narsani o‘zgartirish kerak emas. Ikkinchisida siz o‘z *aktivligingizni* qayta nomlashingiz mumkin (ilovalarda ular bir nechta bo‘lishi mumkin).

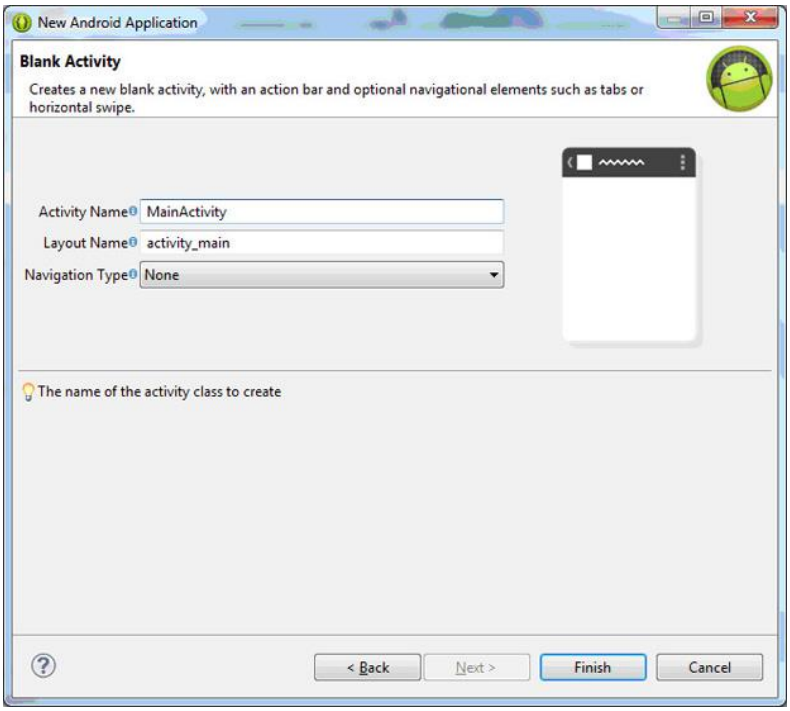


2.13-rasm. Aktivlikni yaratish

Blank Activity – mobil telefonlar uchun mo‘ljallangan *shablon*.

Fullscreen Activity – ilovani butun ekrangan yoyishga imkon beradigan (navigatsion panelsiz va status barsiz) *shablon.*

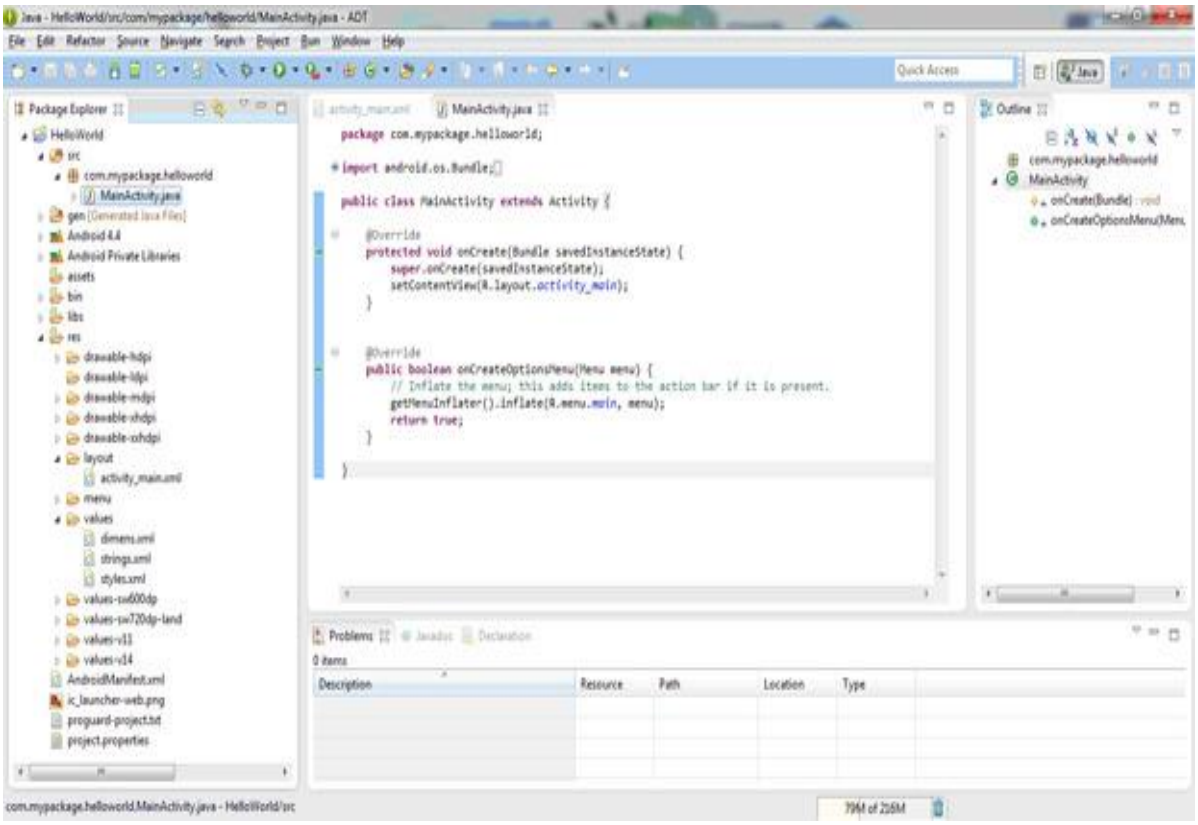
Master/Detail Flow – planshet kompyuterlar uchun mo‘ljallangan *shablon*.



2.14-rasm. Aktivlikni qayta nomlanishi

Demak, siz birinchi o‘z loyihangizni yaratdingiz. Albatta, bu faqat instrumentlarni to‘g‘ri o‘rnatilganligini tekshirish uchun muhitga o‘rnatilgan ilova, lekin ko‘plab ilovalar aynan undan yaratiladi. Uning tuzilmasini ko‘rib chiqamiz. U chapdagi sohada ko‘rsatilgan.

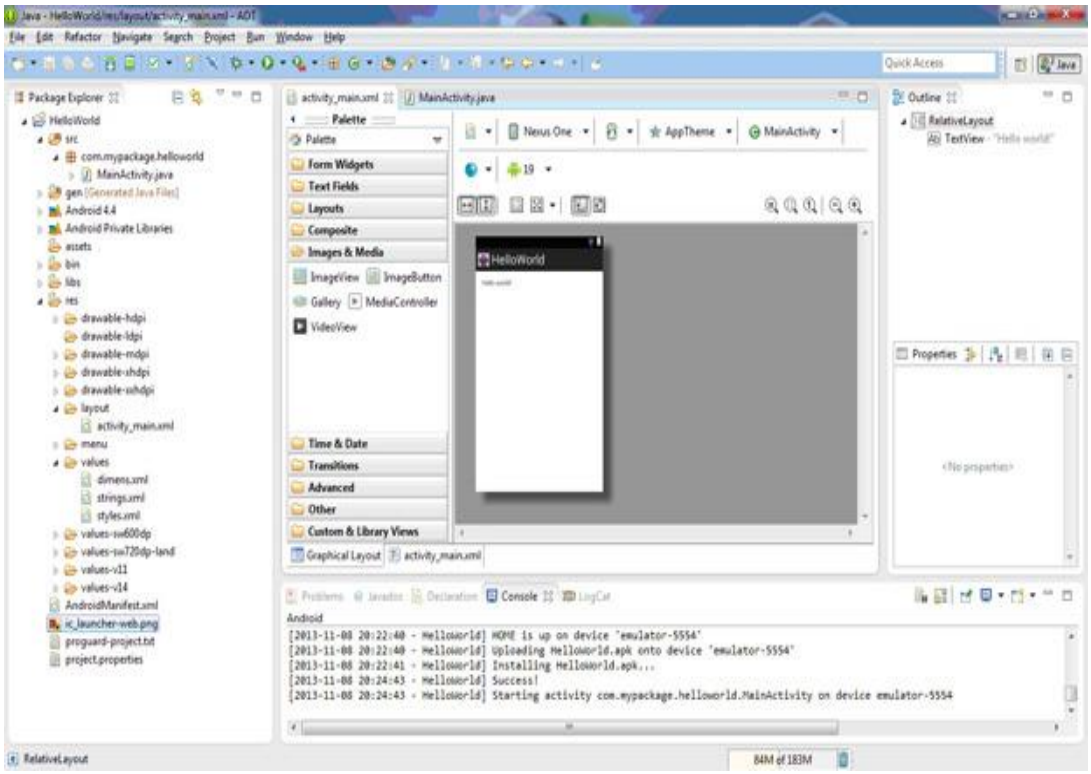
Birinchi *navbatda* bizni aktivlik *fayli* qiziqtiradi. U sizning paketingizda **src** jildda joylashgan. U *.java* kengaytmaga ega.



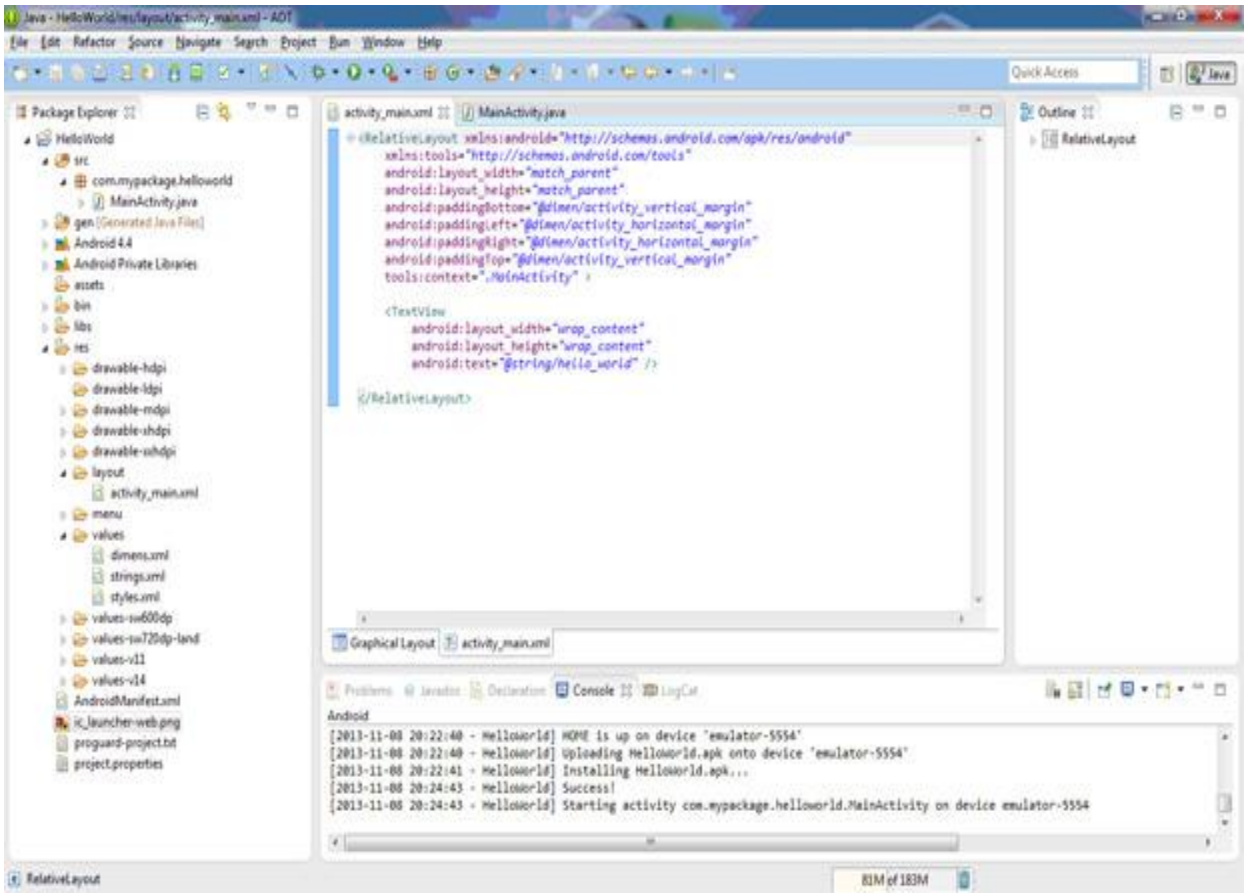
2.15-rasm. Aktivlik

res jilddagi **layout** nimjildda xml-*fayl* joylashgan, u bizning aktivligimizning qobig‘i hisoblanadi. Aynan bu *fayl* qurilma ekranida ko‘rinadi.

xml-fayllar bilan ham grafik redaktor rejimida ishlash mumkin, ham kodni to‘g‘ridan-to‘g‘ri tahrirlash mumkin.



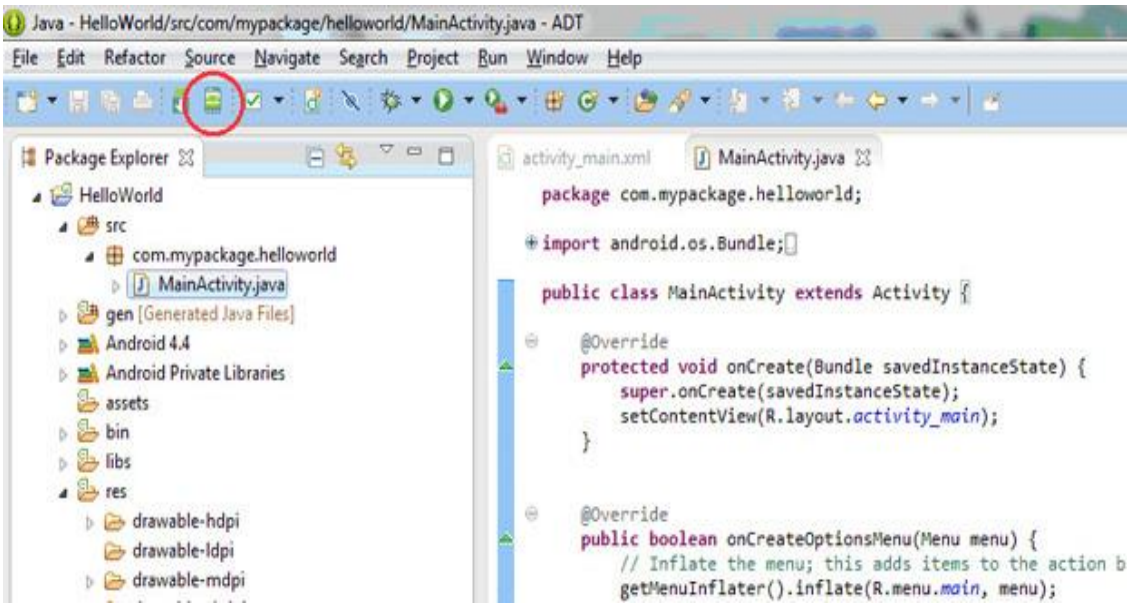
2.16-rasm. Xml-fayl. Grafik redaktor



2.17-rasm. Xml-fayl

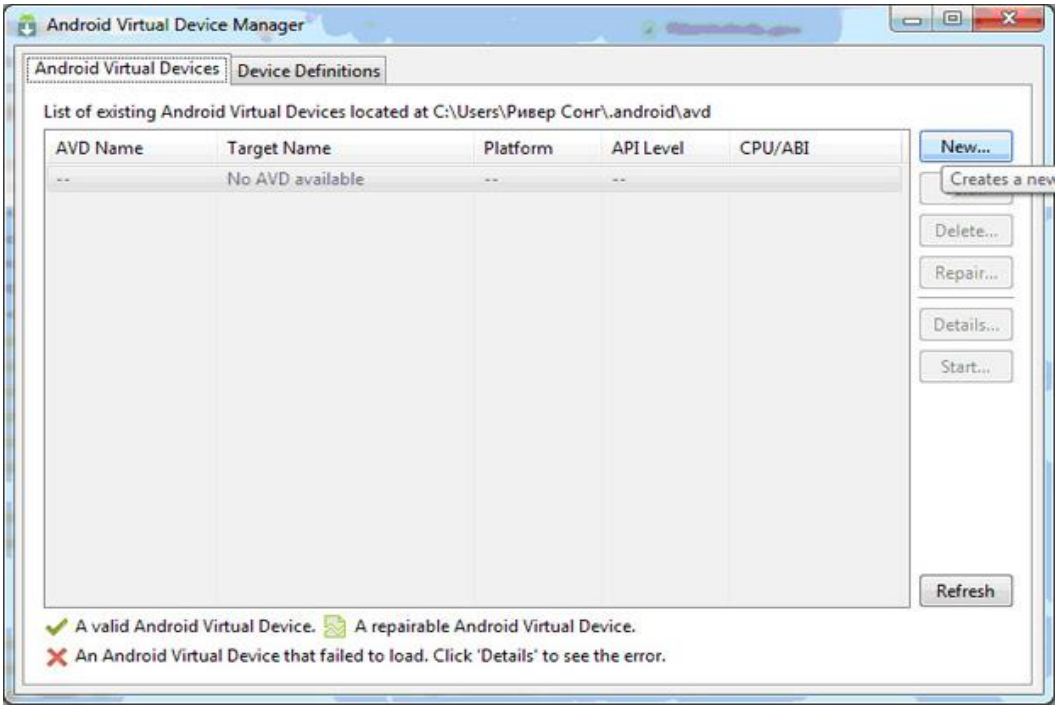
5. Qurilma emulyatorida loyihani ishga tushirish

Birinchi *navbatda* qurilmaning emulyatorini yaratish kerak. Buni instrumentlar panelidagi *smartfon*ni ko‘rsatadigan tugmani bosish bilan amalga oshirish mumkin. Agar panelda tugma bo‘lmasa, uni **Window** *menyu*sidan topish mumkin.



2.18-rasm. Loyihani ishga tushirish

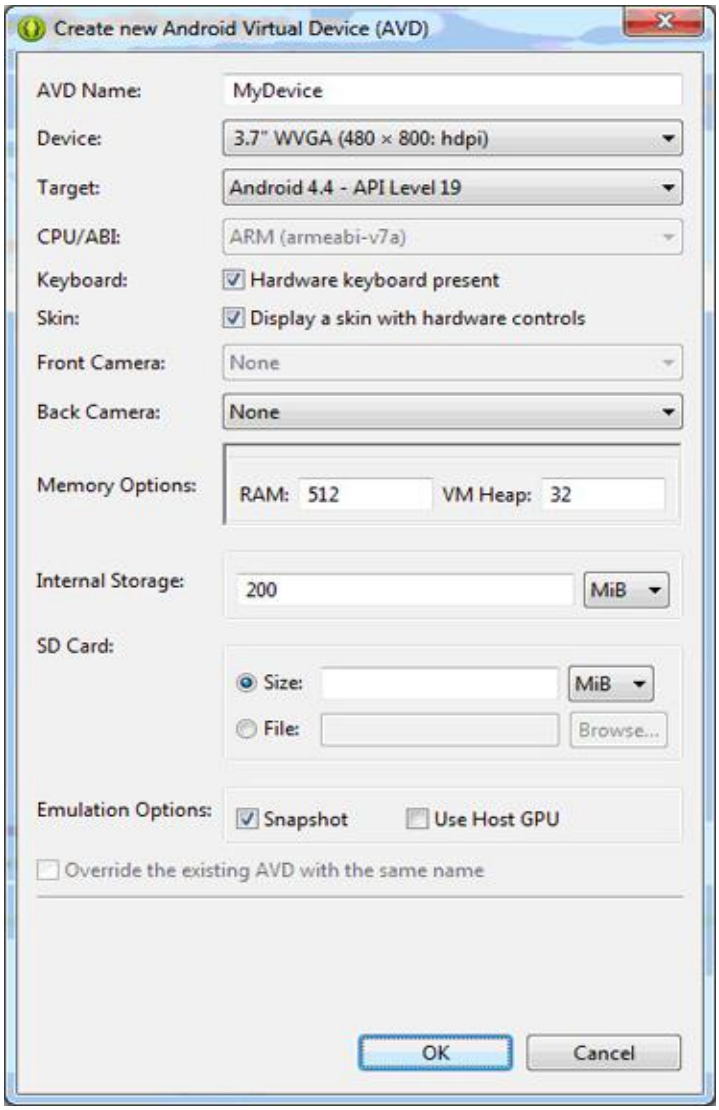
Android Virtual Device Manager ochiladi. Hozircha unda bitta ham virtual qurilma yo‘q.



2.19-rasm. Android Virtual Device Manager

Virtual qurilmani yaratish uchun **New** tugmani bosing. YAratish oynasi paydo bo‘ladi. Sizga qurilmani berish va majburiy xarakteristikalarni tanlash kerak. **Device** – sizning qurilmangizning modeli va **Target** – *Android* versiyasi.

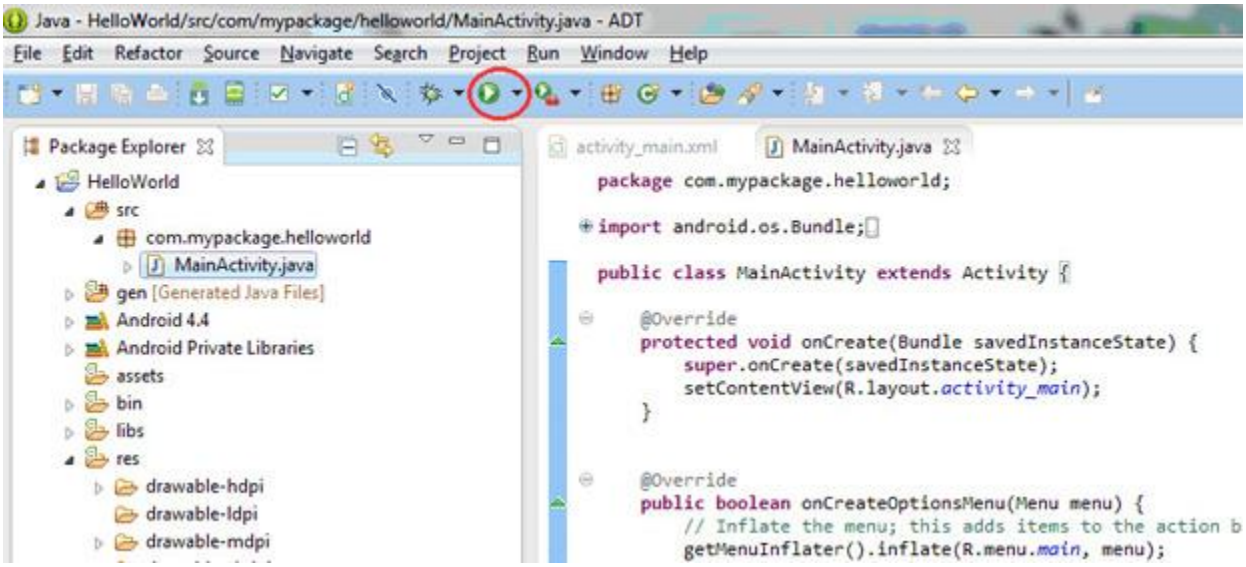
SHuningdek qo‘shimcha parametrlarni o‘zgartirish mumkin: sd-karta o‘lchami, o‘rnatilgan xotira va h.k..



2.20-rasm. AVDni yaratish

Endi *ilovani* ishga tushirish mumkin. Buning uchun instrumentlar panelidagi **Run** (yashil aylanadagi oq uchburchak) tugmasini bosish kerak. Ishga tushirish bilan muammolarni konsolda kuzatish mumkin.

Agar ilova ishga tushmasa, **Run** tugmasidan o‘ngdagi qora uchburchakni bosishga, **Run Configurations**ni tanlashga, keyin **Target** qo‘yilmasidan yaratilgan qurilmani tanlashga va loyihani yana ishga tushirishga urinib ko‘ring

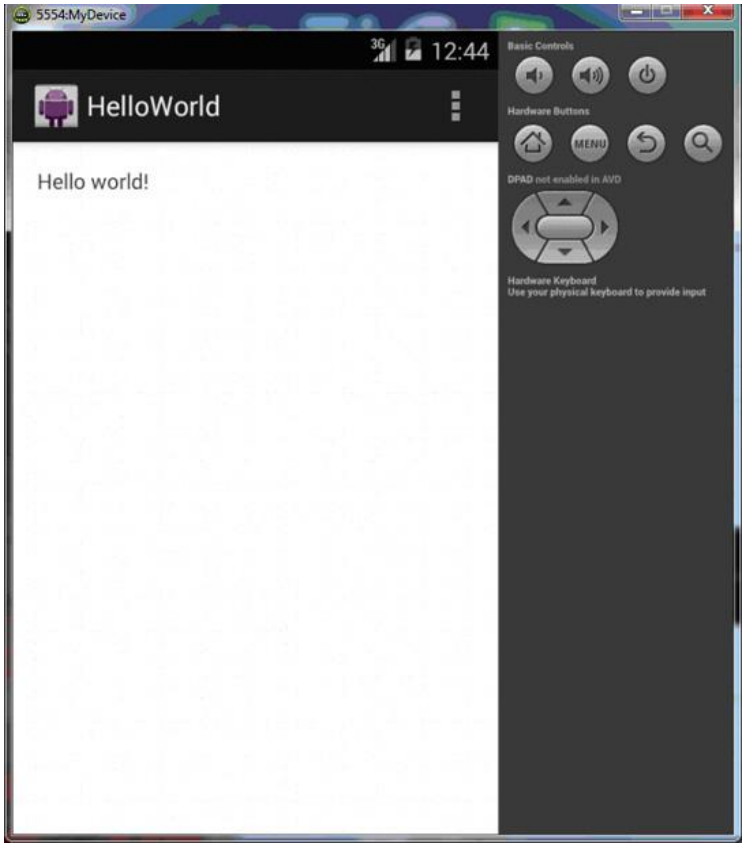


2.21-rasm. Ilovani ishga tushirish

Agar barchasi to‘g‘ri bajarilsa, emulyator ishga tushirilishi kerak. Ishga tushirish vaqti sizning kompyuteringizdagi operativ xotiraga bog‘liq. Keyin emulyatorni yopmaslik mumkin, ilova ishlayotgan emulyatorda ishga tushadi.

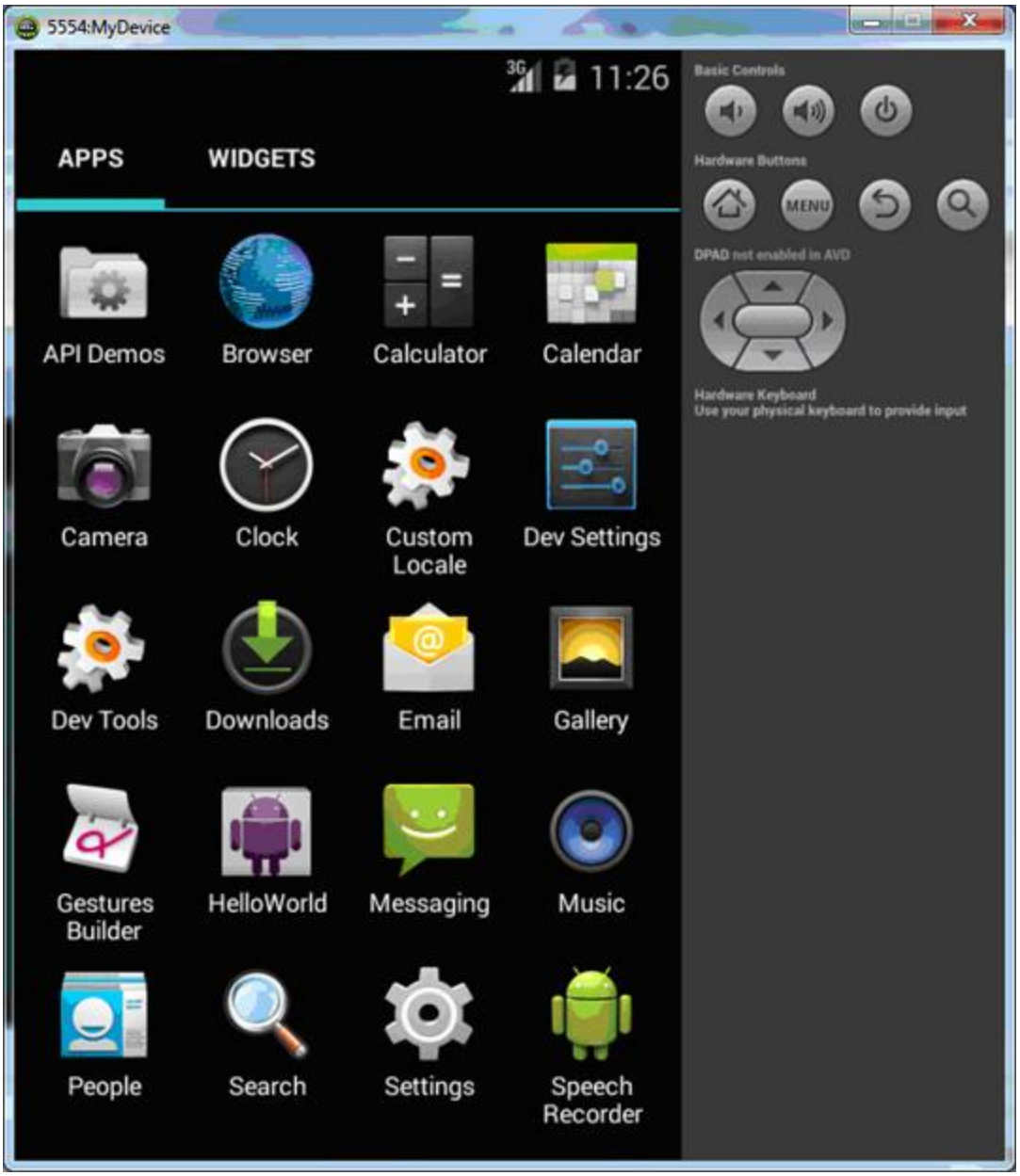
2.22-rasm. Emulyatorni ishga tushirish

2.23-rasm. Ishga tushirilgan emulyator



2.24-rasm. Hello, world! ilovasi

Agar sizning *ilovangiz* birdaniga ishga tushmasa, uni qurilmaning ilovalar menyusidan topish mumkin.



2.25-rasm. Ilovalar menyusi

6. Qurilmada loyihani ishga tushirish

Real qurilmada loyihani ishga tushrishdan oldin quyidagilarni amalga oshirish zarur:

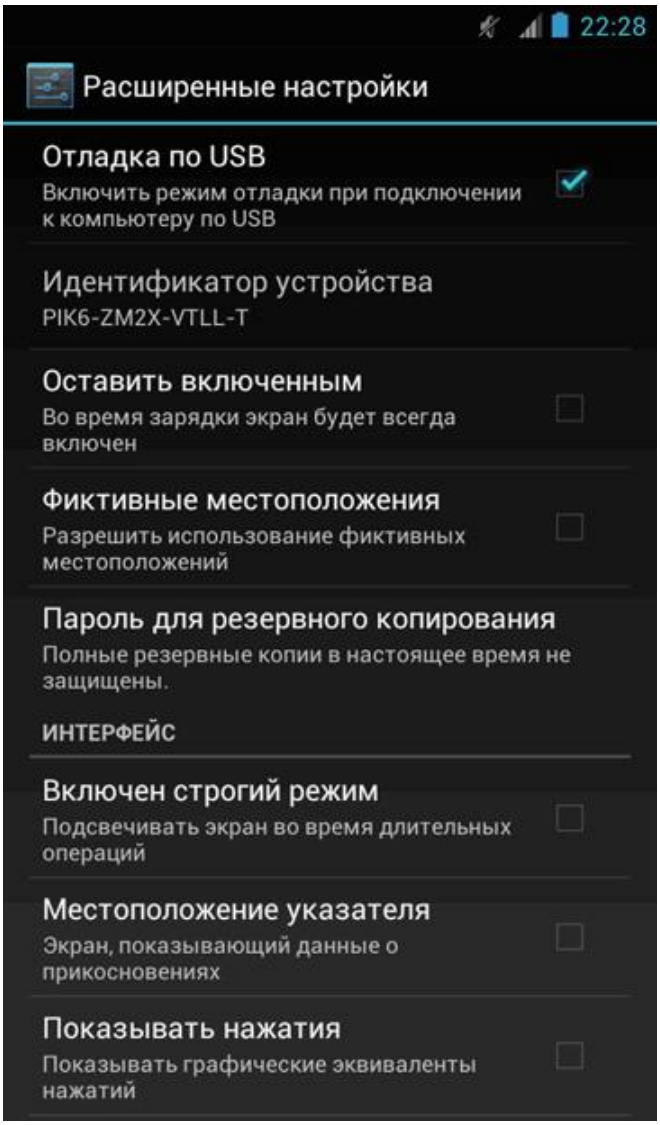
- Qurilmani sozlash;

- Kompyuterni sozlash;
- Muhitni sozlash.

6.1. Qurilmani sozlash

Qurilmani sozlash quyidagidan iborat:

1. USB bo‘yicha sozlash rejimini yoqing.
2. Google Play ilovalar magazinidan olinmagan *.apk kengaytmali fayllarni ishga tushirish uchun muqobil manbalardan ilovalarni o‘rnatishga ruxsat etish zarur.

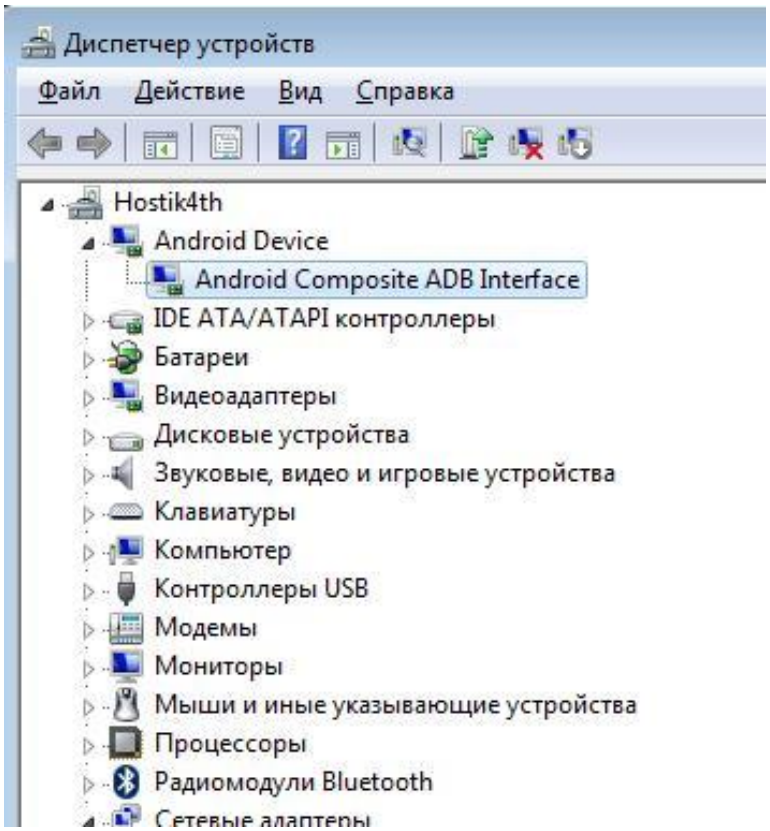


2.26-rasm. Qurilmani sozlash

6.2. Kompyuterni sozlash

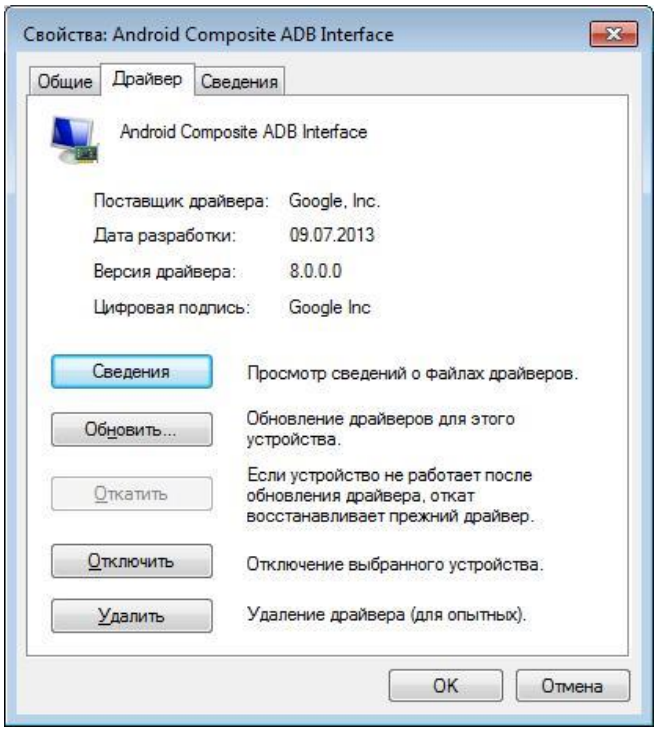
Kompyuterni sozlash uchun quyidagi amallarni bajarish zarur:

1. Qurilmalar dispetcheriga kirish (**Ishga tushirish→Boshqarish paneli→Tizim va xavfsizlik→Tizim→Qurilmalar dispetcheri**) va izning qurilmangizni topish.



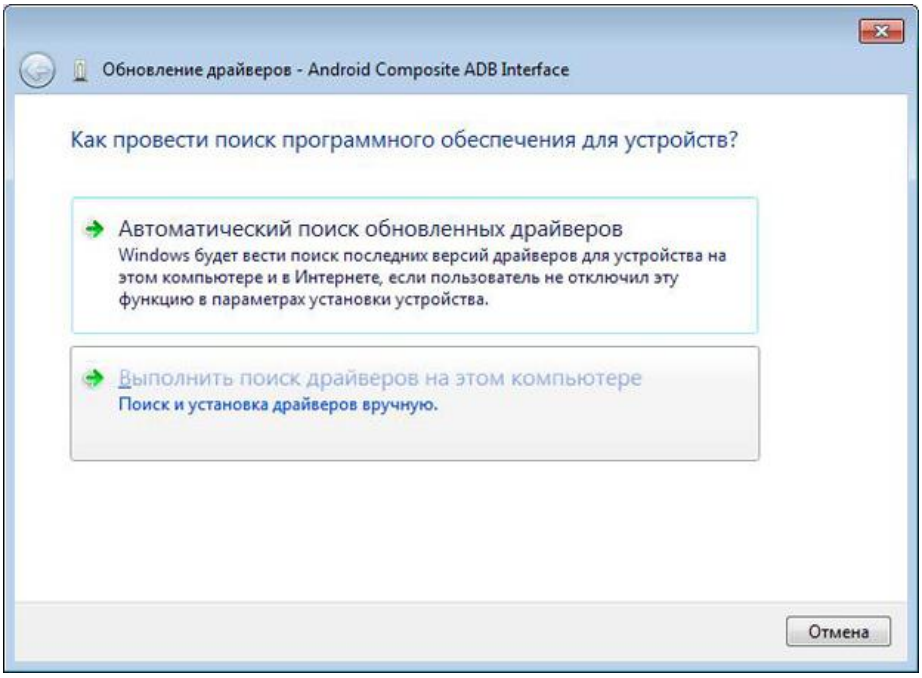
2.27-rasm. Qurilmalar dispetcheri

2. Unga sichqonchaning o‘ng tugmasini bosish va **Xossalar** menyusini chaqirish.



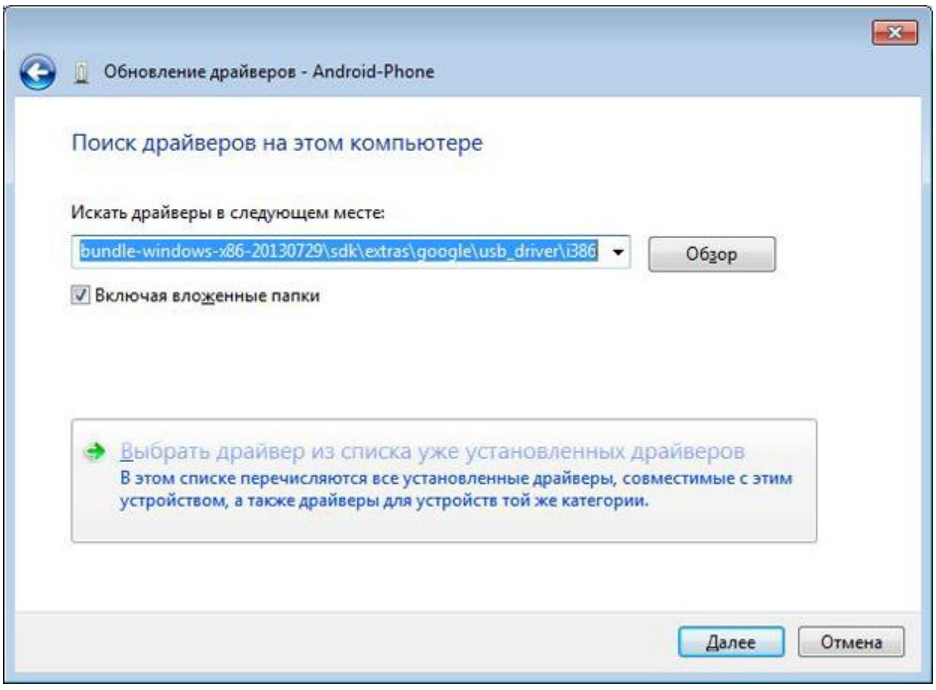
2.28-rasm. Xossalar menyusi

3. **Drayver** qo‘yilmasida drayverni YAngilash tugmasini bosish.



2.29-rasm. Drayverni yangilash

4. Paydo bo‘lgan oynada bukompyuterda **Drayverni qidirishni bajarish**ni tanlash



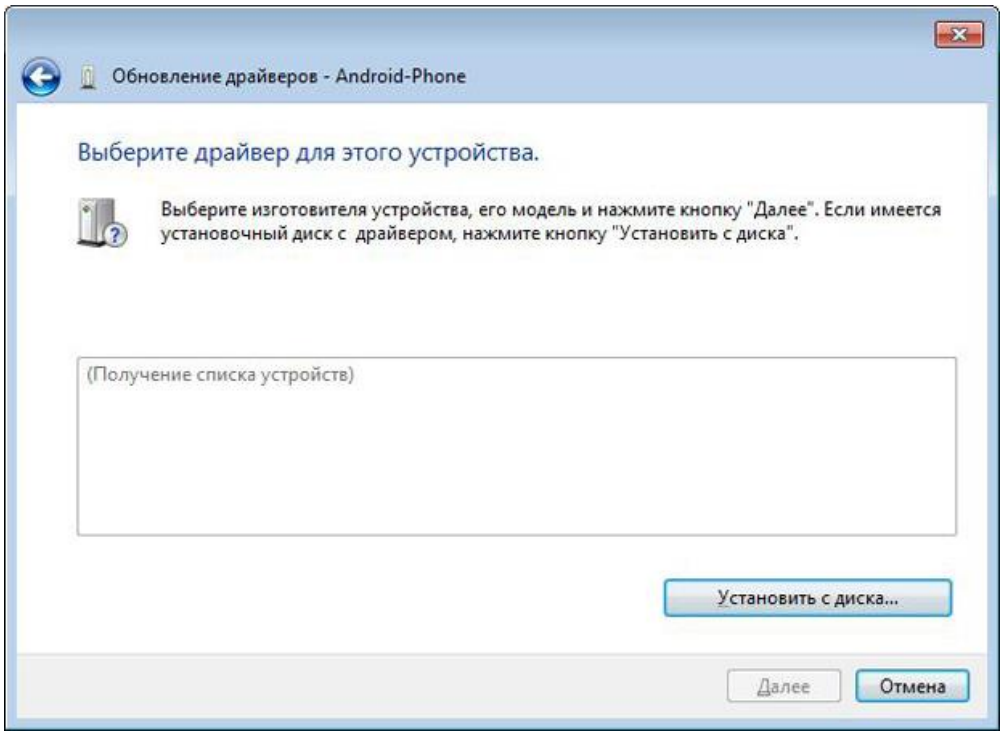
2.30-rasm. Kompyuterda drayverlarni qidirish

5. Navbatdagi oynada drayver o‘rnatiladigan yo‘lni ko‘rsatish kerak.

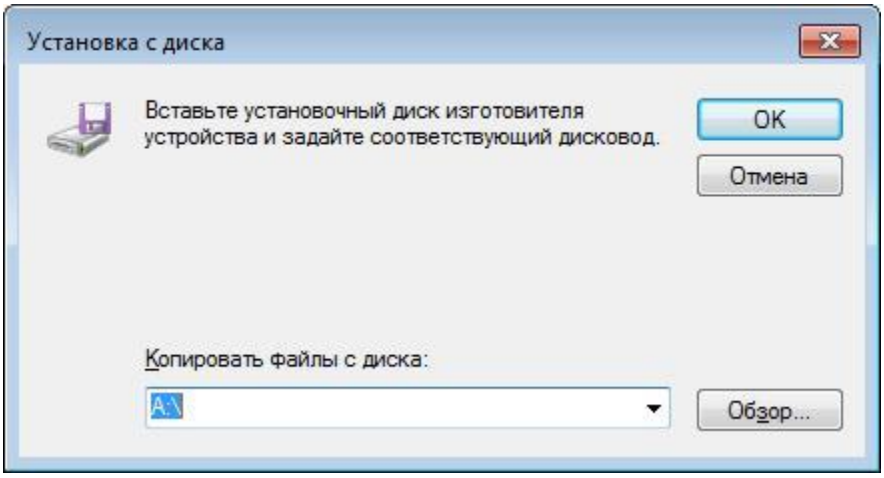
Bizning holda yo‘l quyidagicha: **adt-bundle-windows-x86-20130729\sdk\extras\google\usb_driver\i386**.

YOki drayverni quyidagi tarzda qidirib topish mumkin:

- Navbatdagi oynada **Diskdan o‘rnatishni** bosing;

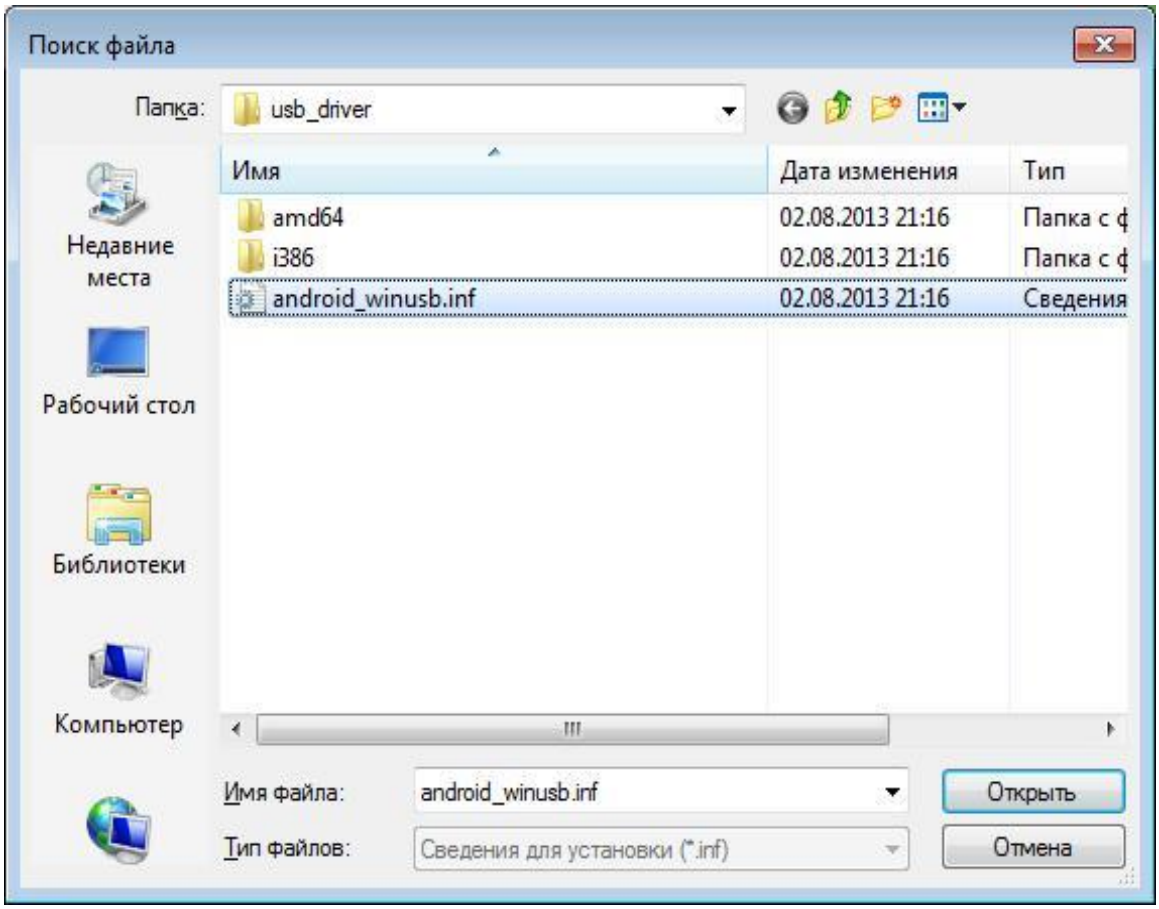


2.31-rasm. Qurilmanin drayverini tanlash



2.32-rasm. Drayverni qidirish

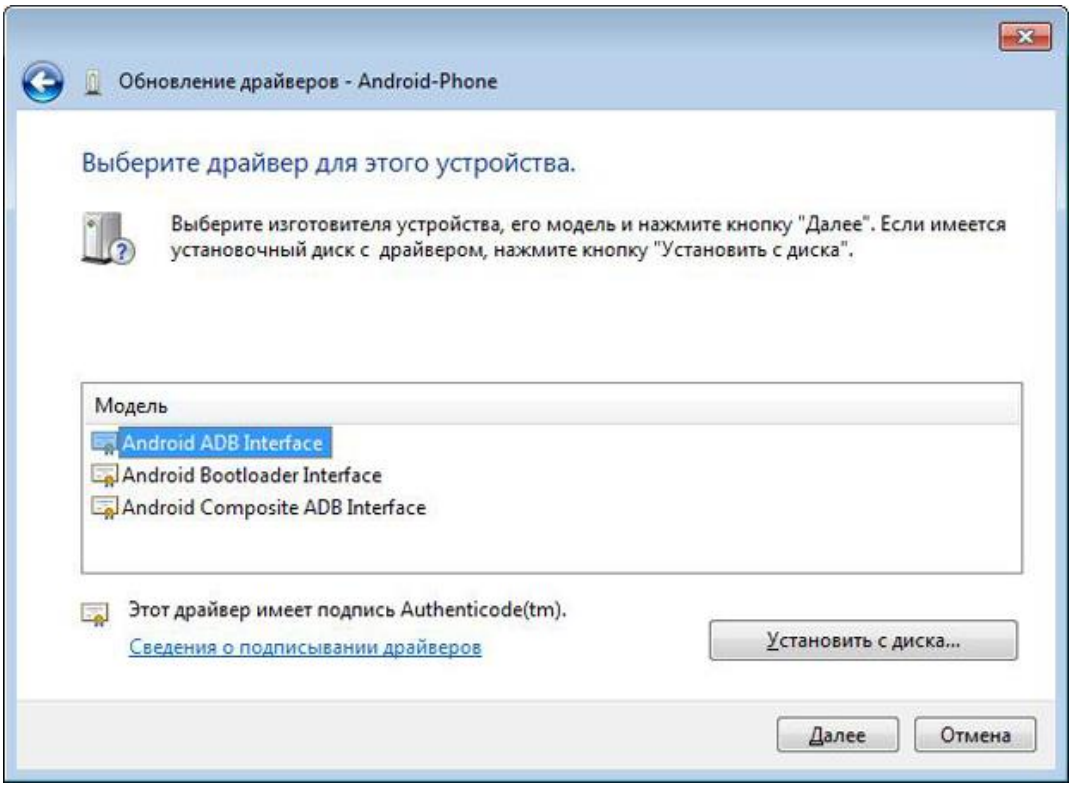
- Keyin android_winusb.inf faylini tanlang;



2.33-rasm. O‘rnatish uchun ma’lumotlar

6. Bu va keyingi oynalarda **Keyingi**ni bosing.

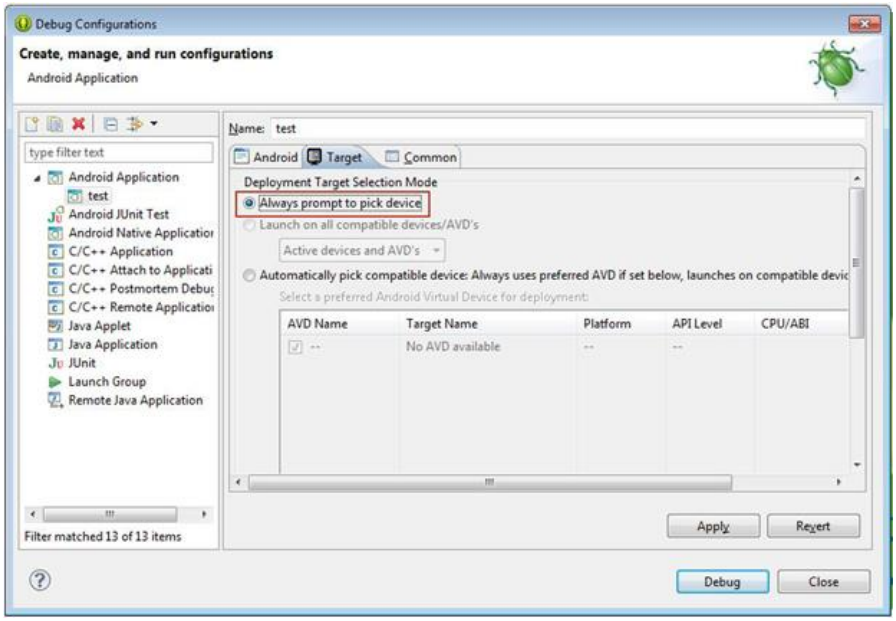
7. Taklif etilgan ro‘yxatdan **Android ADB Interface**ni tanlang va **Keyingi** va **Ha**ni bosing.



2.34-rasm. Drayver o‘rnatilishini yakunlanishi

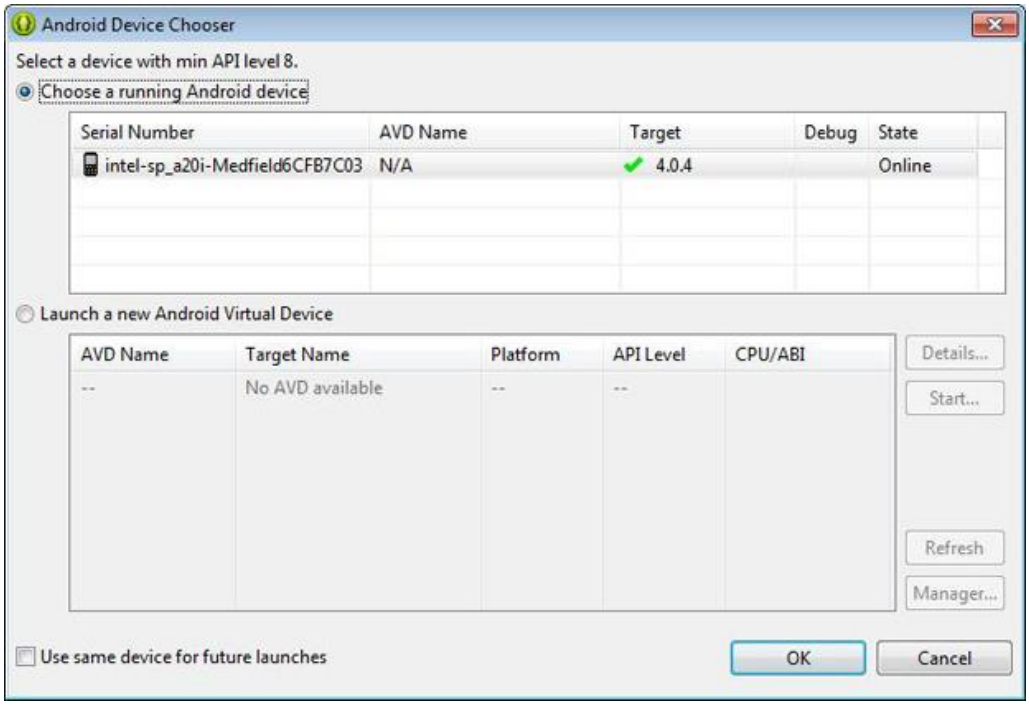
6.3. Muhitni sozlash

1. ADTda **Run\Debug Configurations** menyusiga kiring va **Target** qo‘yilmasiga o‘ting. **Always prompt to pick device** qarshisiga bayroqcha o‘rnating.



2.35-rasm. Muhitni sozlash

2. Ochilgan oynada **Choose a running Android Device** qarshisiga bayroqcha o‘rnatish bilan ulangan qurilmani tanlang.



2.36-rasm. Qurilmani tanlash

3. Endi ilovani ishga tushirish mumkin.

7. Hisobning tarkibi

1. Ishlab chiqilgan loyihaning Xml fayli printskrinini keltirish.
2. Ishlab chiqilgan loyiha kodining listingini keltirish.

Nazorat savollari

1. Android OS uchun qanday ilovalarni ishlab chiqish muhitlari ishlatiladi?
2. *Android SDK* nimadan iborat?
3. *Android JDK* nima hisoblanadi?
4. Muhitni o‘rnatish uchun nimalar zarur?
5. *Minimum Required SDK* nima uchun ishlatiladi?
6. *Target SDK* nima uchun qo‘llaniladi*?*
7. *Create Project in Workspace* qanday funksiyani bajaradi?
8. *Fullscreen Activity* qanday funksiyani bajaradi?
9. Qurilma emulyatorida loyihani qanday ishga tushirish mumkin?
10. *Android Virtual Device Manager* nimani ko‘rsatadi?
11. Virtual qurilmani qanday yaratish mumkin?