



UNIVERZITET U SARAJEVU
ELEKTROTEHNIČKI FAKULTET SARAJEVO

DOMAĆA ZADAĆA 2

ADMINISTRACIJA RAČUNARSKIH SISTEMA

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Indeks: 17993

Odsjek: Računarstvo i Informatika

Datum:

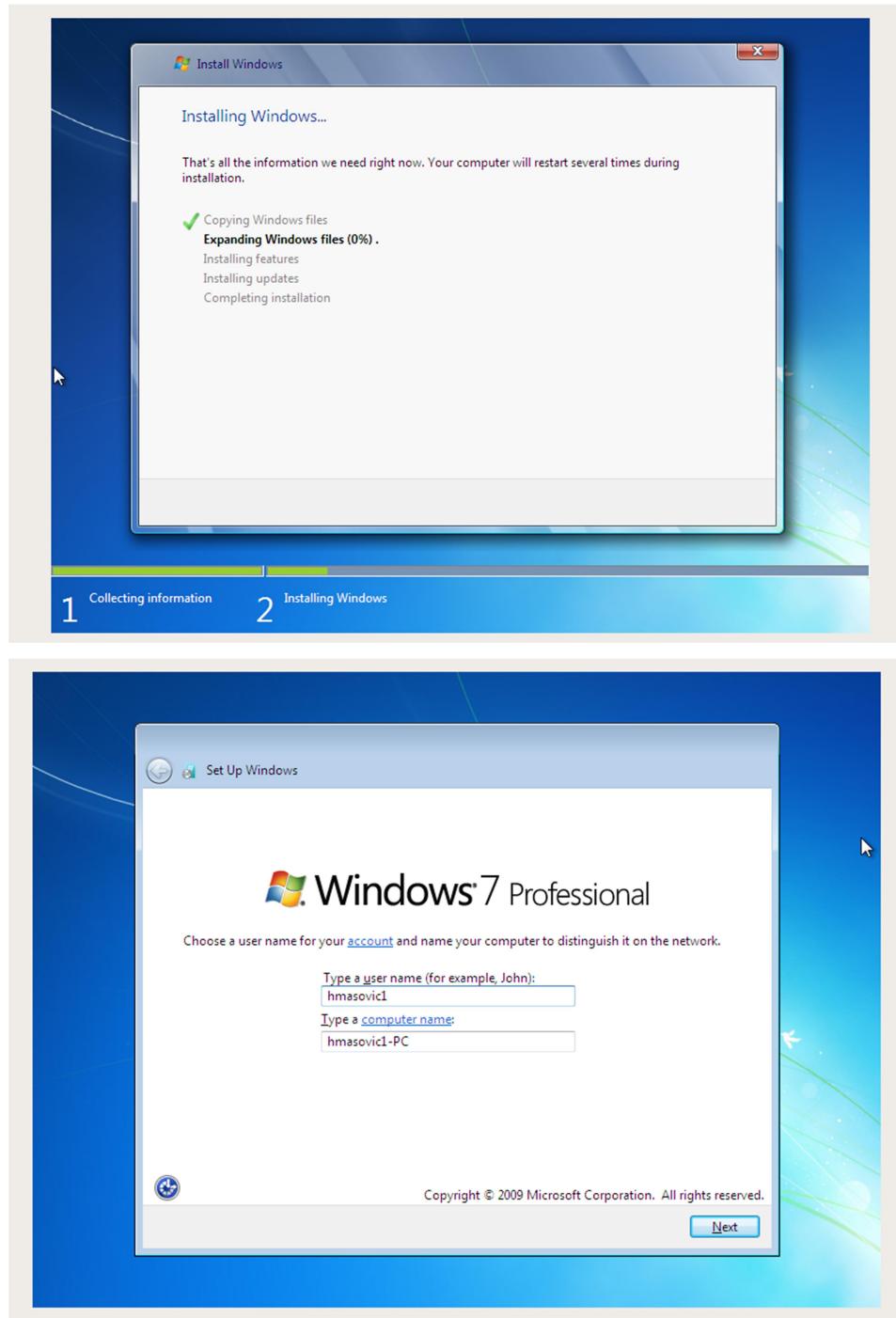
24.03.2019

Potpis:

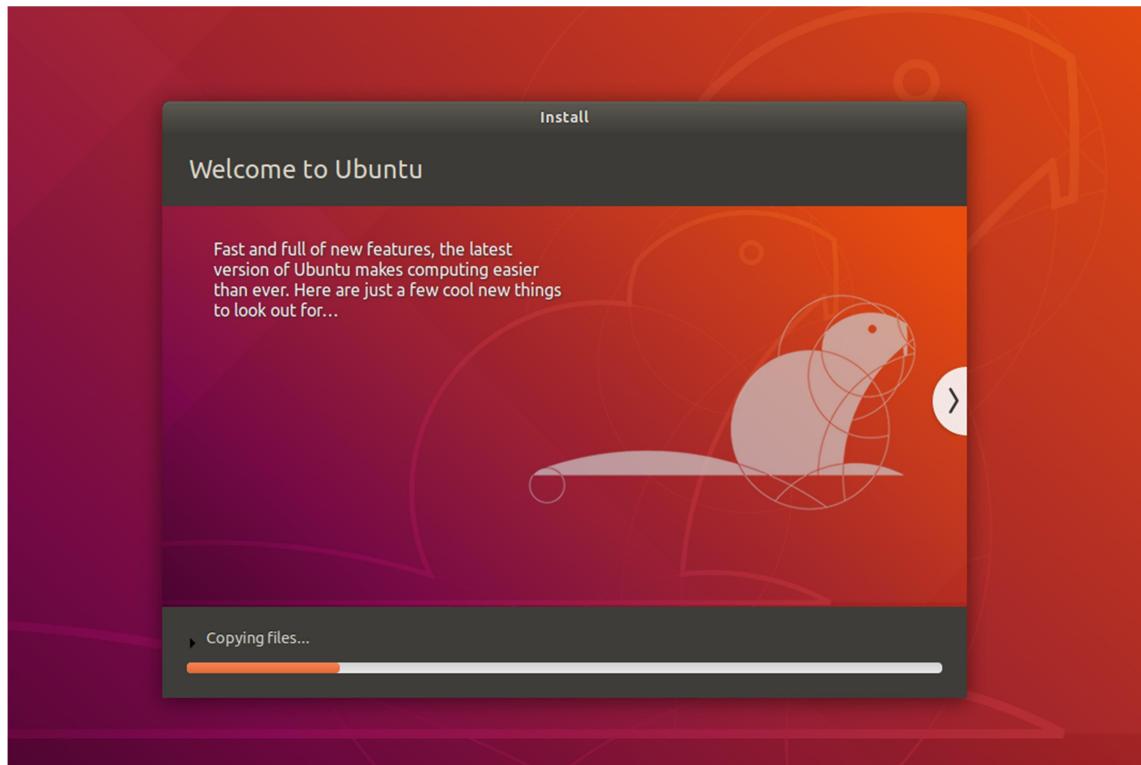
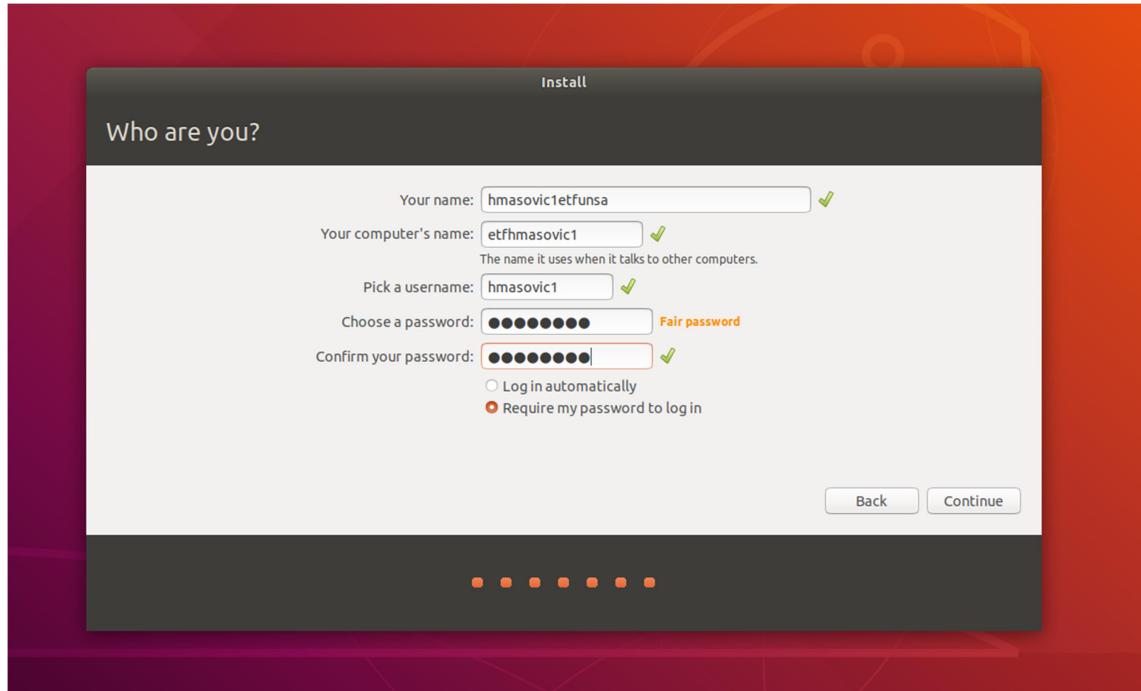
Zadaća je zasnovana na drugoj laboratorijskoj vježbi i predstavlja njen proširenje. Studenti treba da urade i dokumentuju slijedeće akcije:

1. Koristeći Oracle VirtualBox napraviti dvije virtuelne mašine, jednu sa Windows, a drugu sa Linux operativnim sistemima po želji. Na Linux mašini uraditi update i upgrade sistema.

Pomoću Oracle VirtualBox-a kreirane su dvije virtuelne mašine, sa različitim operativnim sistemima. Na prvu virtuelnu mašinu instaliran je Windows operativni sistem sa verzijom 7 32 bitna. Proces instalacija prikazan je sljedećim slikama:



Na drugoj virtuelnoj mašini je instaliran Linux operativni sistem (Ubuntu 18.04.). Proces instalacije prikazan je sljedećim slikama:



Po završetku instalacije, urađen je **update** i **upgrade** na Linux operativnom sistemu, koristeći sljedeće komande: **sudo apt-get update** i **sudo apt-get upgrade**. U nastavku su prikazane slike:

Activities Terminal Ned 17:11 hmasovic1@etfhmasovic1: ~

```
File Edit View Search Terminal Help
hmasovic1@etfhmasovic1:~$ sudo apt-get update
[sudo] password for hmasovic1:
Hit:1 http://ba.archive.ubuntu.com/ubuntu bionic InRelease
Get:2 http://ba.archive.ubuntu.com/ubuntu bionic-updates InRelease [88,7 kB]
Get:3 http://security.ubuntu.com/ubuntu bionic-security InRelease [88,7 kB]
Get:4 http://ba.archive.ubuntu.com/ubuntu bionic-backports InRelease [74,6 kB]
Get:5 http://ba.archive.ubuntu.com/ubuntu bionic-updates/main amd64 DEP-11 Meta
data [278 kB]
Get:6 http://ba.archive.ubuntu.com/ubuntu bionic-updates/main DEP-11 48x48 Icons [66,6 kB]
Get:7 http://ba.archive.ubuntu.com/ubuntu bionic-updates/main DEP-11 64x64 Icons [123 kB]
Get:8 http://ba.archive.ubuntu.com/ubuntu bionic-updates/universe amd64 DEP-11
Metadata [203 kB]
Get:9 http://ba.archive.ubuntu.com/ubuntu bionic-updates/universe DEP-11 48x48
Icons [195 kB]
Get:10 http://ba.archive.ubuntu.com/ubuntu bionic-updates/universe DEP-11 64x64
Icons [358 kB]
Get:11 http://ba.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 DEP-
11 Metadata [2468 B]
Get:12 http://ba.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 DEP-
11 Metadata [7352 B]
Fetched 1486 kB in 4s (398 kB/s)
Reading package lists... Done
(arg: 3) ^C
(arg: 3) ^C
hmasovic1@etfhmasovic1:~$
```

Activities Terminal Ned 17:14 hmasovic1@etfhmasovic1: ~

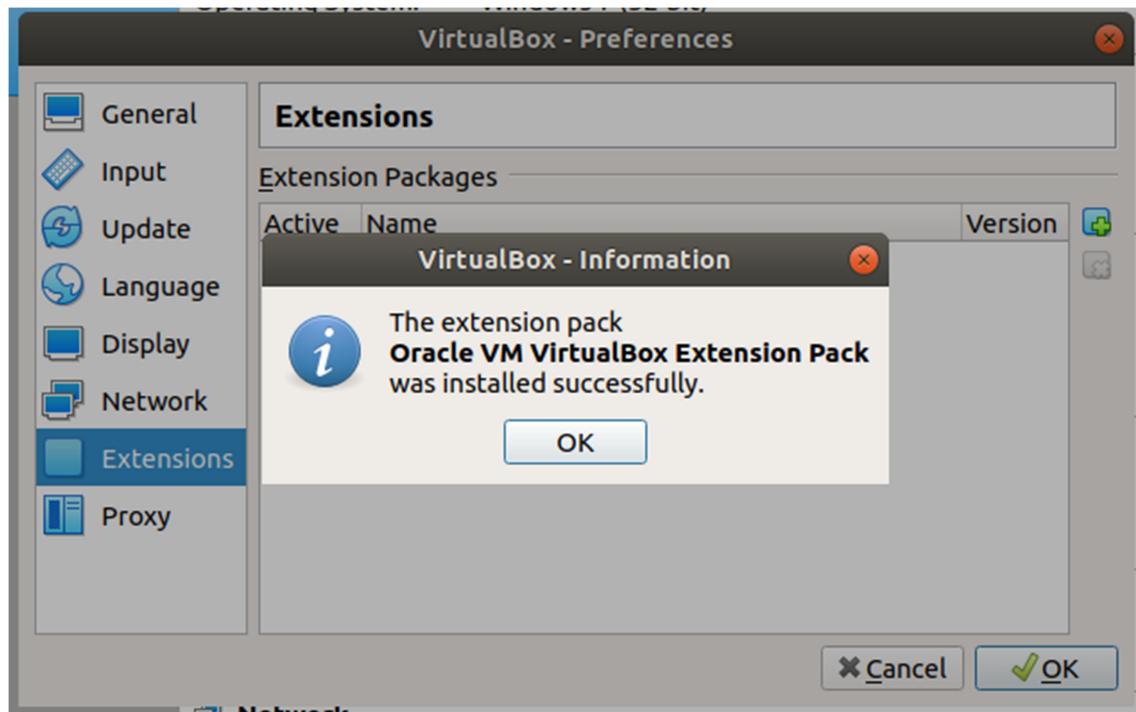
```
File Edit View Search Terminal Help
Get:11 http://ba.archive.ubuntu.com/ubuntu bionic-updates/multiverse amd64 DEP-
11 Metadata [2468 B]
Get:12 http://ba.archive.ubuntu.com/ubuntu bionic-backports/universe amd64 DEP-
11 Metadata [7352 B]
Fetched 1486 kB in 4s (398 kB/s)
Reading package lists... Done
(arg: 3) ^C
(arg: 3) ^C
hmasovic1@etfhmasovic1:~$ sudo apt-get upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following packages have been kept back:
  linux-generic-hwe-18.04 linux-headers-generic-hwe-18.04
  linux-image-generic-hwe-18.04
The following packages will be upgraded:
  apport apport-gtk apt apt-utils bind9-host busybox-initramfs busybox-static
  cups cups-bsd cups-client cups-common cups-core-drivers cups-daemon
  cups-ipp-utils cups-ppdc cups-server-common distro-info-data dnsutils file
  firefox gdm3 ghostscript ghostscript-x gir1.2-dbusmenu-glib-0.4
  gir1.2-gdm-1.0 gir1.2-gtk-3.0 gir1.2-javascriptcoregtk-4.0
  gir1.2-packagekitglib-1.0 gir1.2-webkit2-4.0 gnome-settings-daemon
  gnome-settings-daemon-schemas gstreamer1.0-packagekit gtk-update-icon-cache
  gvfs gvfs-backends gvfs-bin gvfs-common gvfs-daemons gvfs-fuse gvfs-libs
  initramfs-tools initramfs-tools-bin initramfs-tools-core libapt-inst2.0
  libapt-pkg5.0 libbind9-160 libcogl-common libcogl-pango20 libcogl-path20
  libcogl20 libcurl2 libcurlscgi1 libcurlsimage2 libcurlsmime1 libcurlsppdci
  libibusmenu-qlib4 libibusmenu-qtk3-4 libibusmenu-atk4 libdns-export1100
```

2. Instalirati VirtualBox Extension Pack i omogućiti podršku za USB na obje mašine.

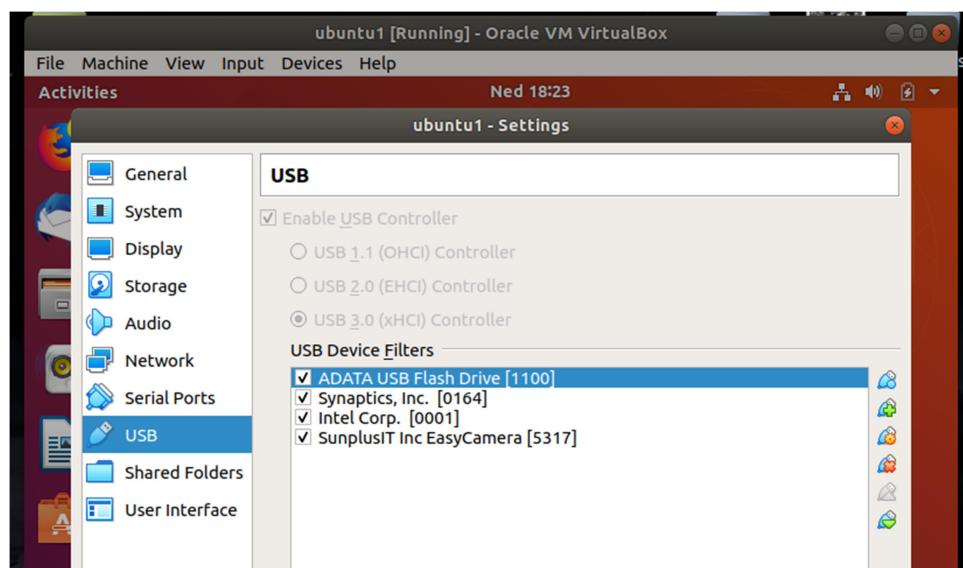
Da bi instalirali VirtualBox Extension Pack i omogućili usb podršku, prvo ga moramo skinuti sa sljedećeg linka:

https://download.virtualbox.org/virtualbox/6.0.4/Oracle_VM_VirtualBox_Extension_Pack-6.0.4.vbox-extpack

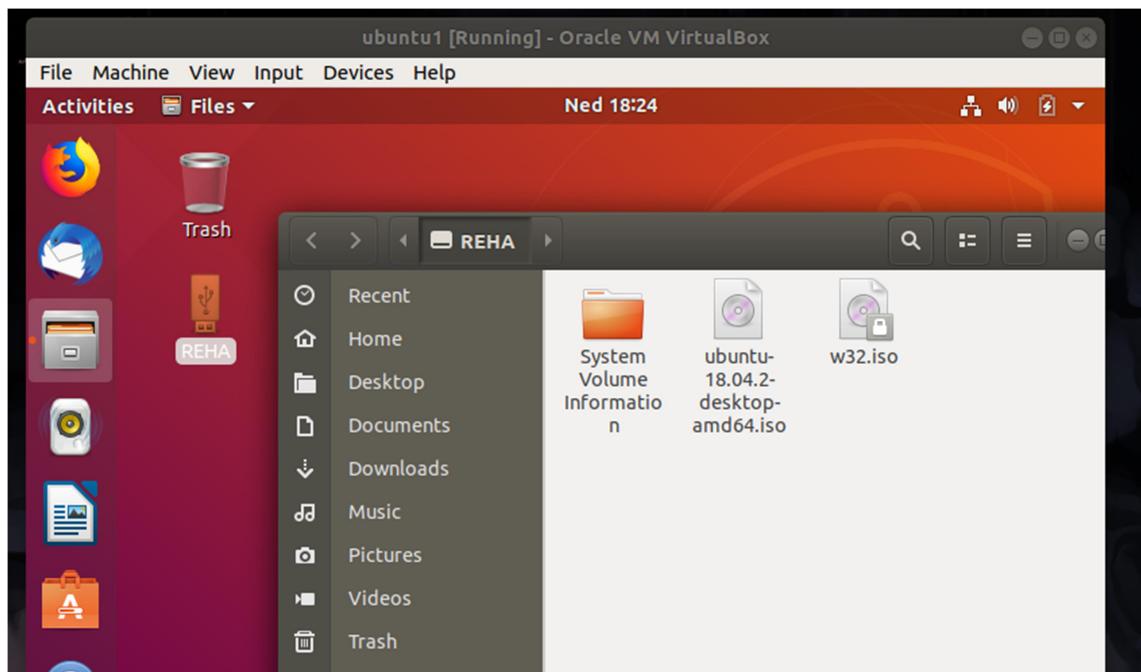
te u File, references i extensions dodati tu ekstenziju. Kao rezultat dobijamo sljedeće:



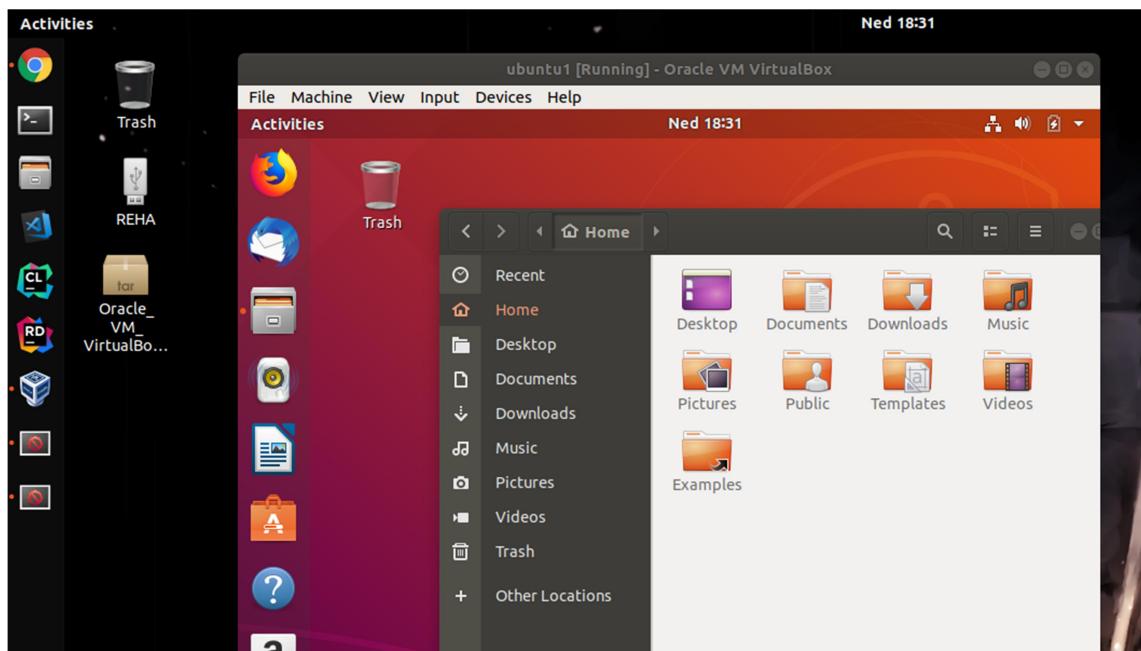
Zatim na host OS pokrenemo komandu sudo usermod -aG vboxusers <USERNAME>, gdje je USERNAME naš host OS username imati ćemo mogućnost da pod USB postavkama virtuelne mašine dodamo usb-ove kojima mogu pristupiti.



(U nastavku će biti prikazana funkcionalnost sa virtuelne linux mašine i sa host linux mašine, jer određena funkcionalnost dijeljenja usb-a ne radi kad je windows virtuelna mašina, a linux host [probano + asistent Haris rekao isto na vježbama]).

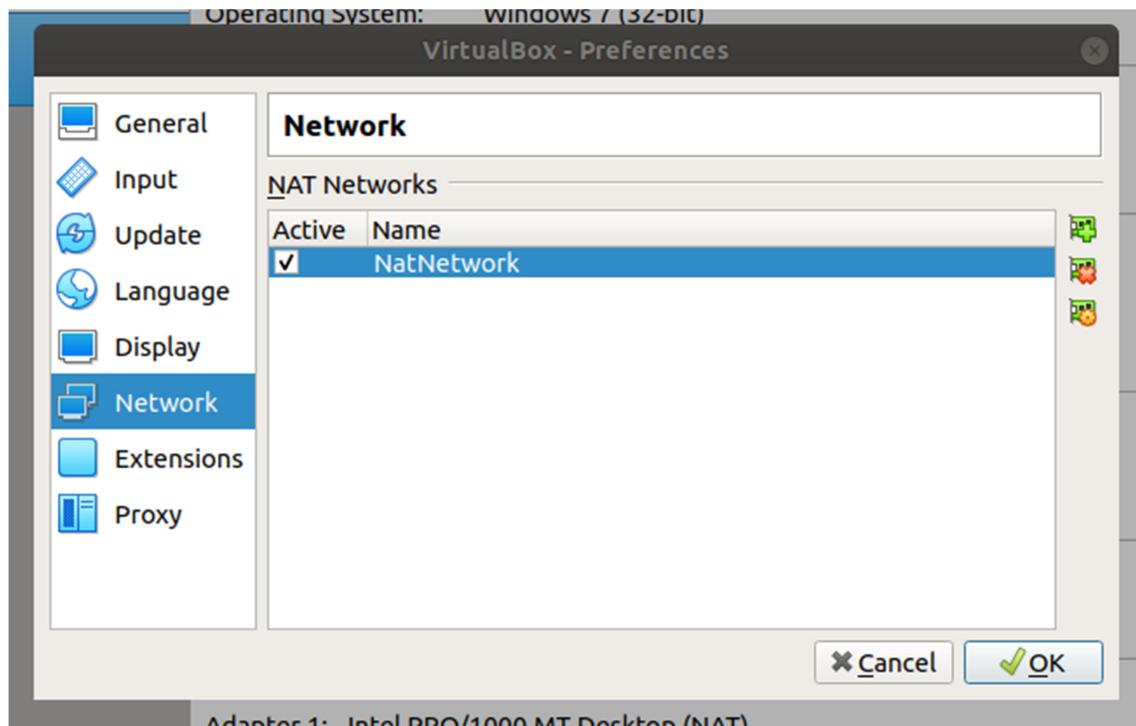


Brisanjem dodanog usb device filtera (ADATA) vratit ćemo prikaz usb-a na host OS-u.

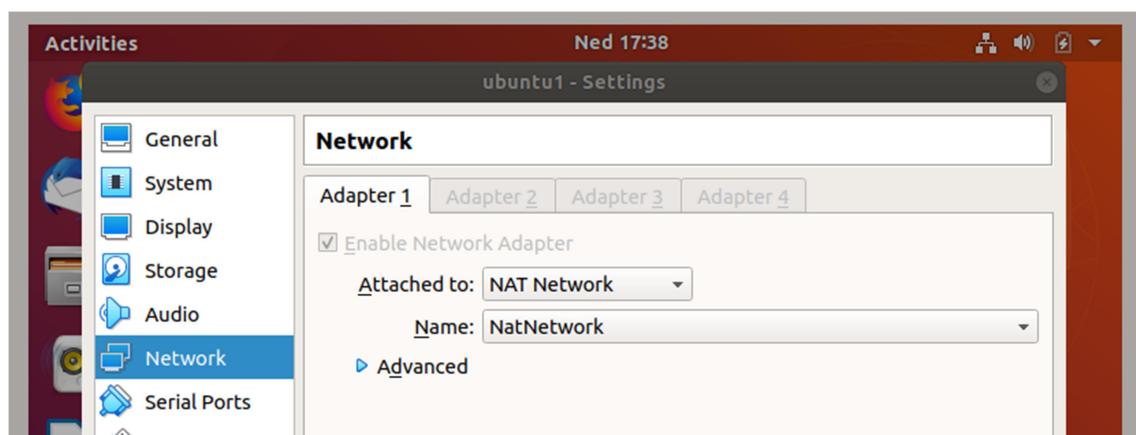


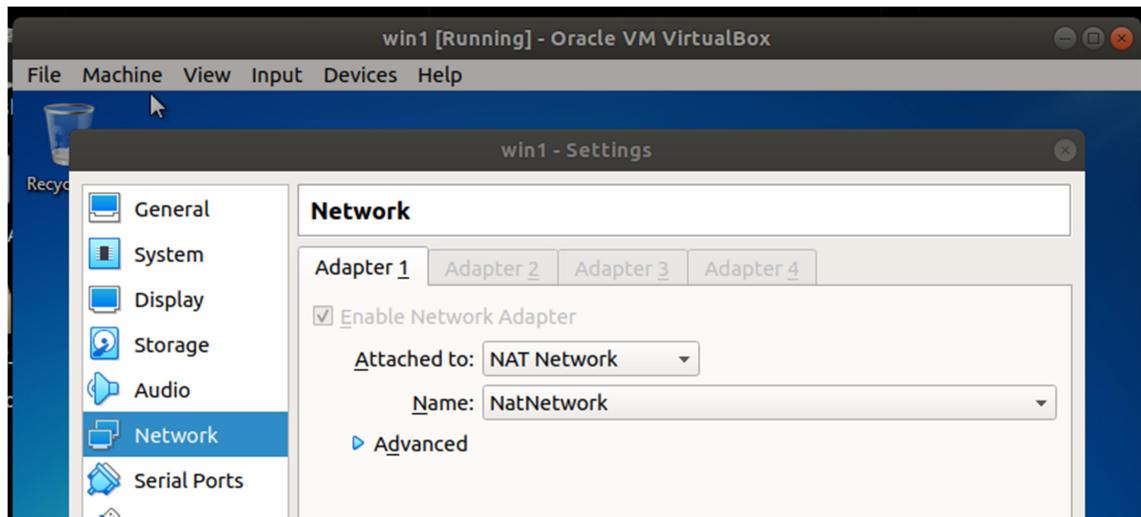
3. Umrežiti virtuelne mašine na način da mogu međusobno komunicirati i pristupiti Internetu, ali da nisu vidljive uređajima na vanjskoj mreži. Pristupiti Yahoo portalu radi testiranja pristupa Internetu. Očitati mrežne postavke na mašinama.

Virtuelne mašine je potrebno umrežiti na način da mogu međusobno komunicirati i da mogu pristupati Internetu, ali da nisu vidljive uređajima na vanjskoj mreži. U tu svrhu, potrebno je kreirati NAT mrežu. U postavkama VirtualBox-a kreirana je NAT mreža pod imenom NatNetwork:

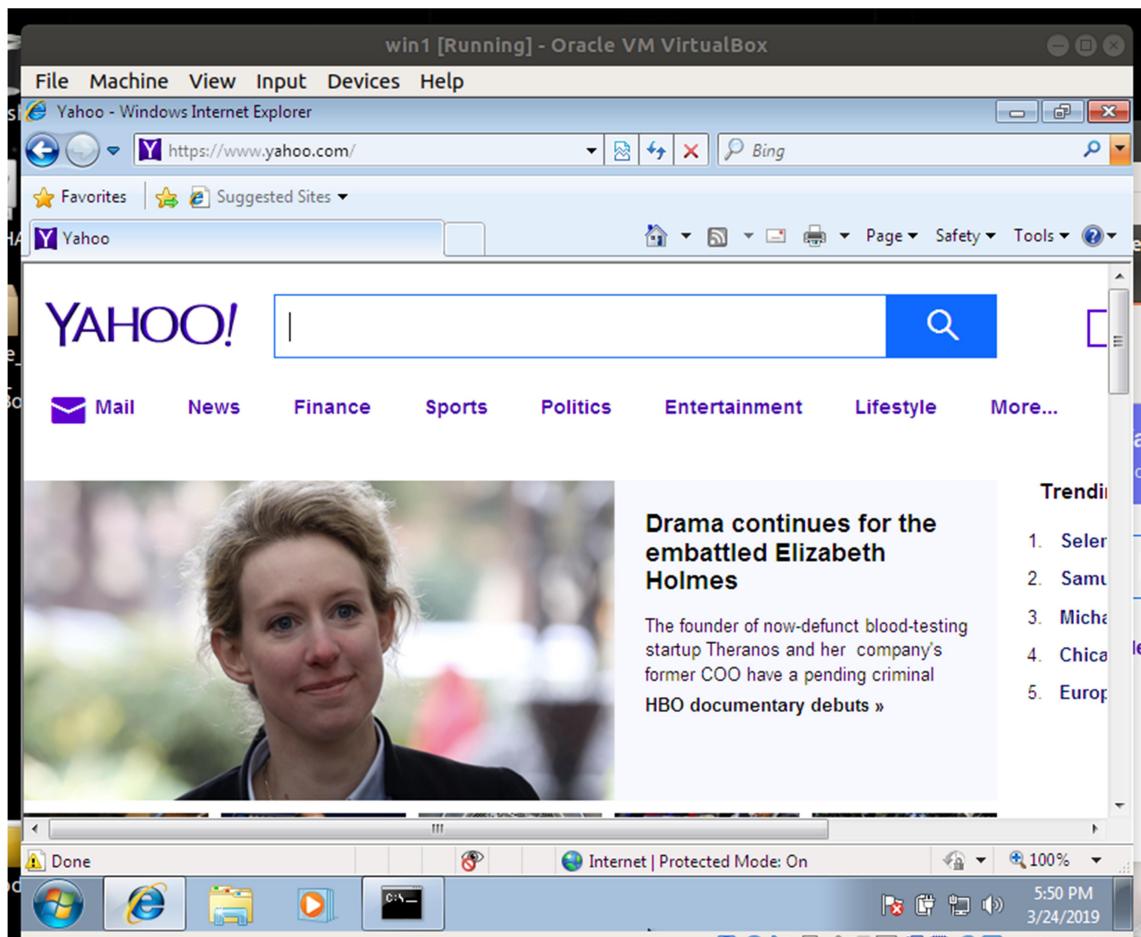


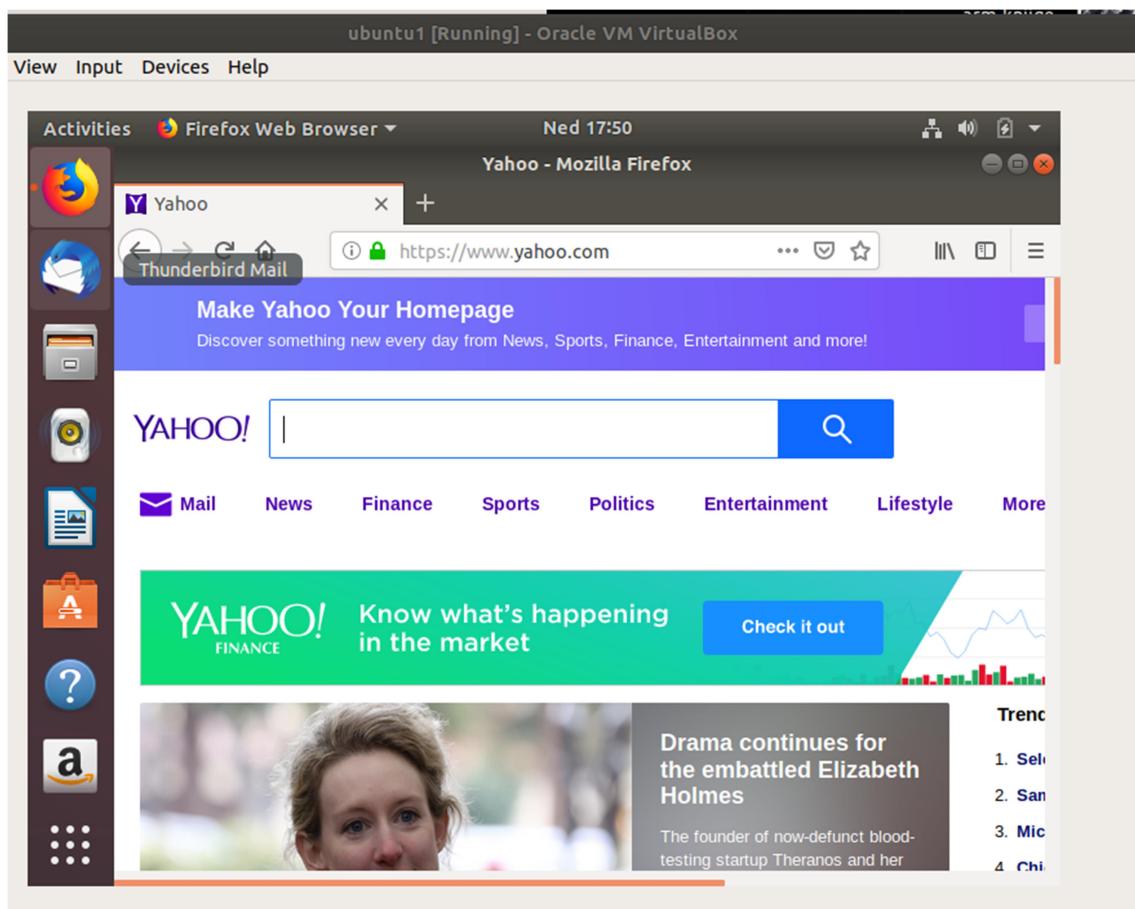
Sljedeći korak je da "spojimo" obje od naših virtuelnih mašina na kreiranu mrežu:



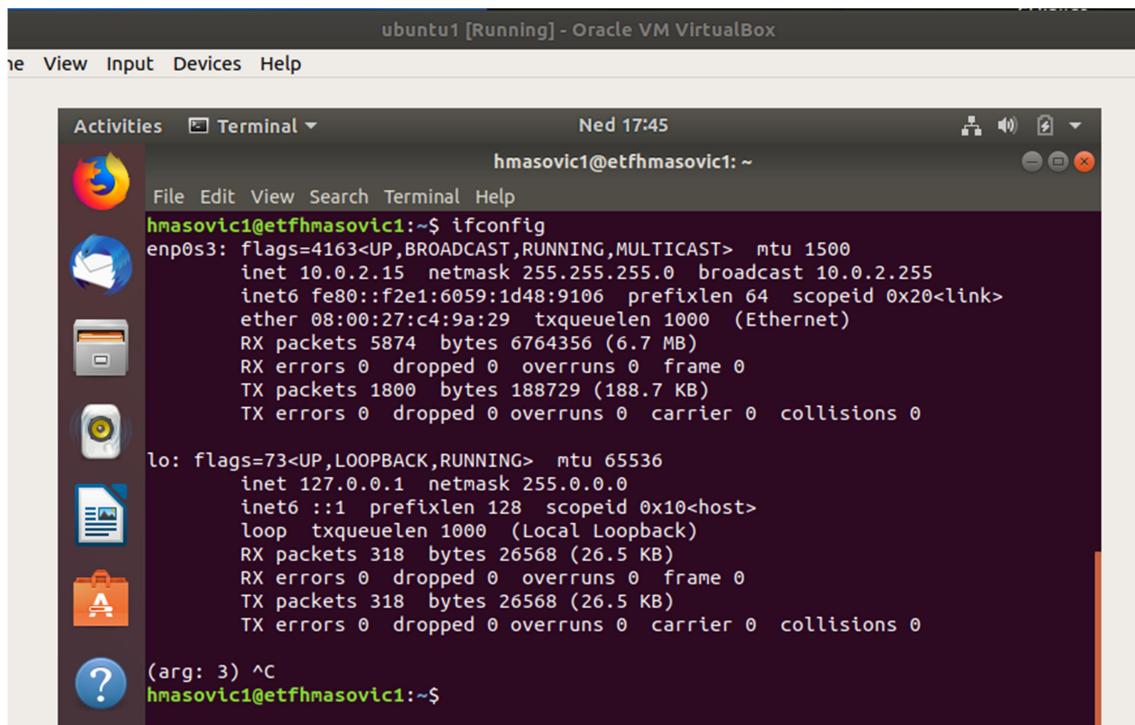


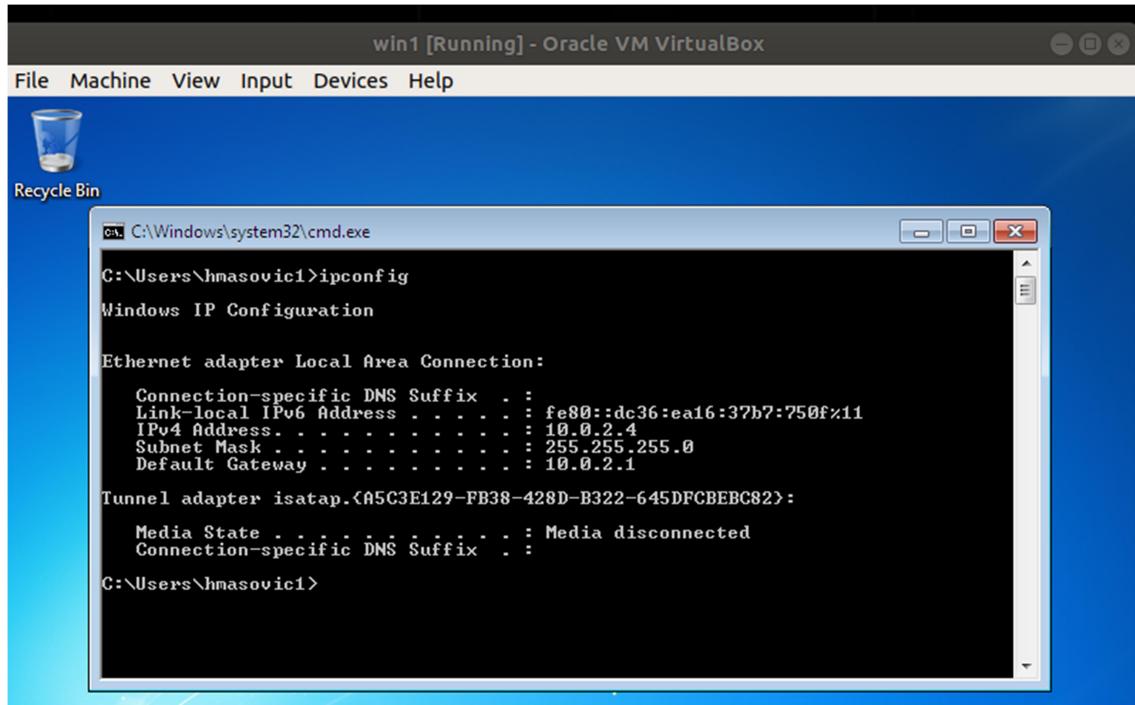
Pristupimo yahoo portalu radi testiranja konekcije:





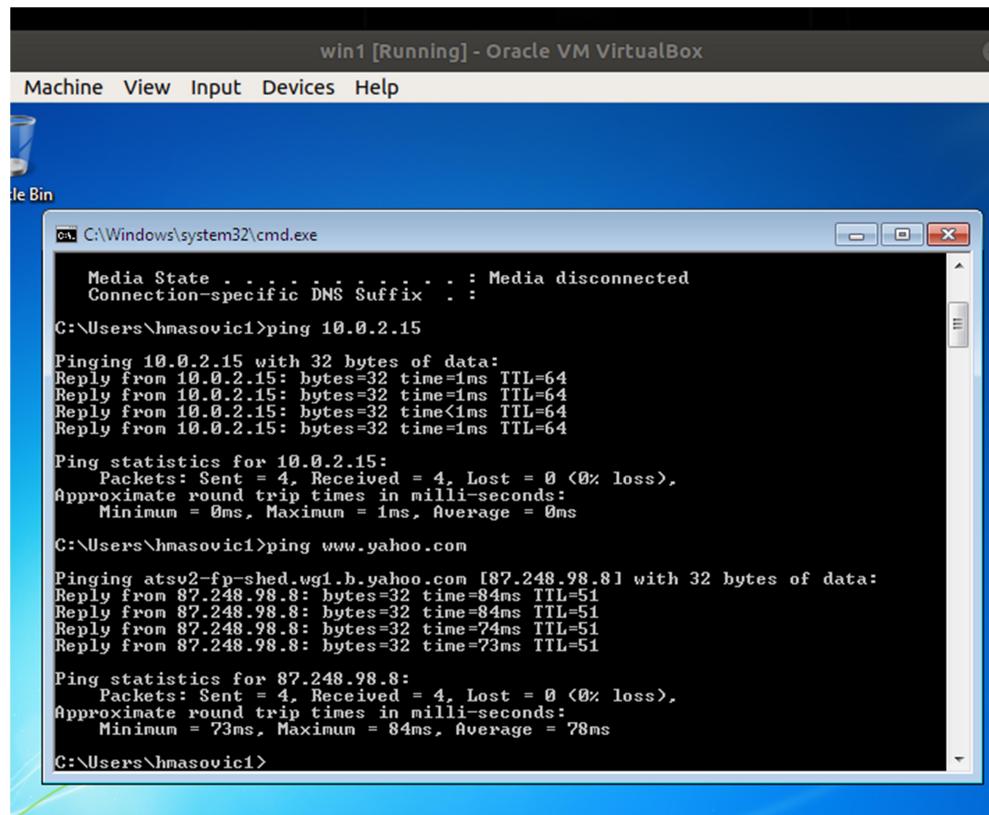
Na kraju još očitajmo mrežne postavke (ključne su nam lokalne ip adrese za pinganje):





4. Pokrenuti ping između mašina i prema Internetu. Pobrinuti se da pingovi prolaze.

U sljedećim slikama ćemo prikazati pinganje svake mašine prema internetu i prema svom komšiji (drugoj mašini). Da bi linux mašina mogla slati windows mašini pakete potrebno je isključiti firewall.



ubuntu1 [Running] - Oracle VM VirtualBox

View Input Devices Help

Activities Terminal Ned 17:57 hmasovic1@etfhmasovic1:~

```
File Edit View Search Terminal Help
hmasovic1@etfhmasovic1:~$ ping www.yahoo.com
PING atsv2-fp-shed.wg1.b.yahoo.com (87.248.98.7) 56(84) bytes of data.
64 bytes from media-router-fp1.prod1.media.vip.ir2.yahoo.com (87.248.98.7): icmp
p_seq=1 ttl=52 time=98.3 ms
64 bytes from media-router-fp1.prod1.media.vip.ir2.yahoo.com (87.248.98.7): icmp
p_seq=2 ttl=52 time=78.1 ms
64 bytes from media-router-fp1.prod1.media.vip.ir2.yahoo.com (87.248.98.7): icmp
p_seq=3 ttl=52 time=94.9 ms
64 bytes from media-router-fp1.prod1.media.vip.ir2.yahoo.com (87.248.98.7): icmp
p_seq=4 ttl=52 time=79.1 ms
^C
--- atsv2-fp-shed.wg1.b.yahoo.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3007ms
rtt min/avg/max/mdev = 78.154/87.657/98.310/9.072 ms
hmasovic1@etfhmasovic1:~$ ping 10.0.2.4
PING 10.0.2.4 (10.0.2.4) 56(84) bytes of data.
64 bytes from 10.0.2.4: icmp_seq=1 ttl=128 time=1.51 ms
64 bytes from 10.0.2.4: icmp_seq=2 ttl=128 time=0.804 ms
64 bytes from 10.0.2.4: icmp_seq=3 ttl=128 time=1.11 ms
64 bytes from 10.0.2.4: icmp_seq=4 ttl=128 time=0.989 ms
64 bytes from 10.0.2.4: icmp_seq=5 ttl=128 time=1.37 ms
64 bytes from 10.0.2.4: icmp_seq=6 ttl=128 time=1.08 ms
64 bytes from 10.0.2.4: icmp_seq=7 ttl=128 time=1.26 ms
^C
--- 10.0.2.4 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6015ms
rtt min/avg/max/mdev = 0.804/1.163/1.513/0.225 ms
hmasovic1@etfhmasovic1:~$
```

5. Nacrtati kako bi u stvarnosti izgledala ova mreža da su sistemi na odvojenim uređajima. U mrežnu topologiju uključiti jedan switch i jedan router.

