TEHNIČKA ŠKOLA
RUĐERA BOŠKOVIĆA
Zagreb, Getaldićeva 4

Nastavni predmet	RAČUNALNE MREŽE
Naslov cjeline	Fizički pristup mreži
Naslov jedinice	Vježba 2: Osnovne mrežne postavke računala

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Učenik će znati pridruživati i provjeravati osnovne mrežne postavke računala.

PRIPREMA ZA VJEŽBU

U pisanoj formi odgovori na slijedeća pitanja:

1. **Što je to i čemu služi protokol DHCP?**

DHCP mrežni je protokol korišten od strane mrežnih računala za dodjeljivanje IP adresa i ostalih mrežnih postavki kao što su pretpostavljeni gateway, subnet maska i IP adrese DNS servera s DHCP servera. Olakšava konfiguraciju mreže jer eliminira ručno dodavanje osnovnih postavki za jednu računalnu mrežu. DHCP klijent se brine da su dodijeljene IP adrese ispravne i da u mreži nema sukoba adresa.

2. **Što je to i kako se koristi naredba ping?**

Ping naredba šalje pakete podataka na određenu IP adresu ili URL na mreži, a zatim vam omogućuje da znate koliko je vremena potrebno za prijenos tih podataka i dobivanje odgovora. U sustavu Windows, pritisnite Windows + R. U prozoru za upravljanje upišite "cmd" u okvir za pretraživanje, a zatim pritisnite tipku Enter. U upit upišite "ping" zajedno s URL-om ili IP adresom koju želite pingati, a zatim pritisnite tipku Enter.

3. **Napiši primjer IPv4 adrese!**

IPv4 Address. . . . . : 192.168.50.22

4. **Napiši primjer MAC adrese!**

70-85-C2-CE-9A-DC

5. **Objasni čemu služi loopback adresa! Kako izgleda loopback adresa?**

Adresa koja počinje sa 127 je rezervirana IPv4 adresa. 127.0.0.1 je loopback adresa i služi za provjeru da li je TCP/IP instaliran i funkcionalan na računalu. Nalazi se na svakom računalu sa intaliranim TCP/IP protokolom.

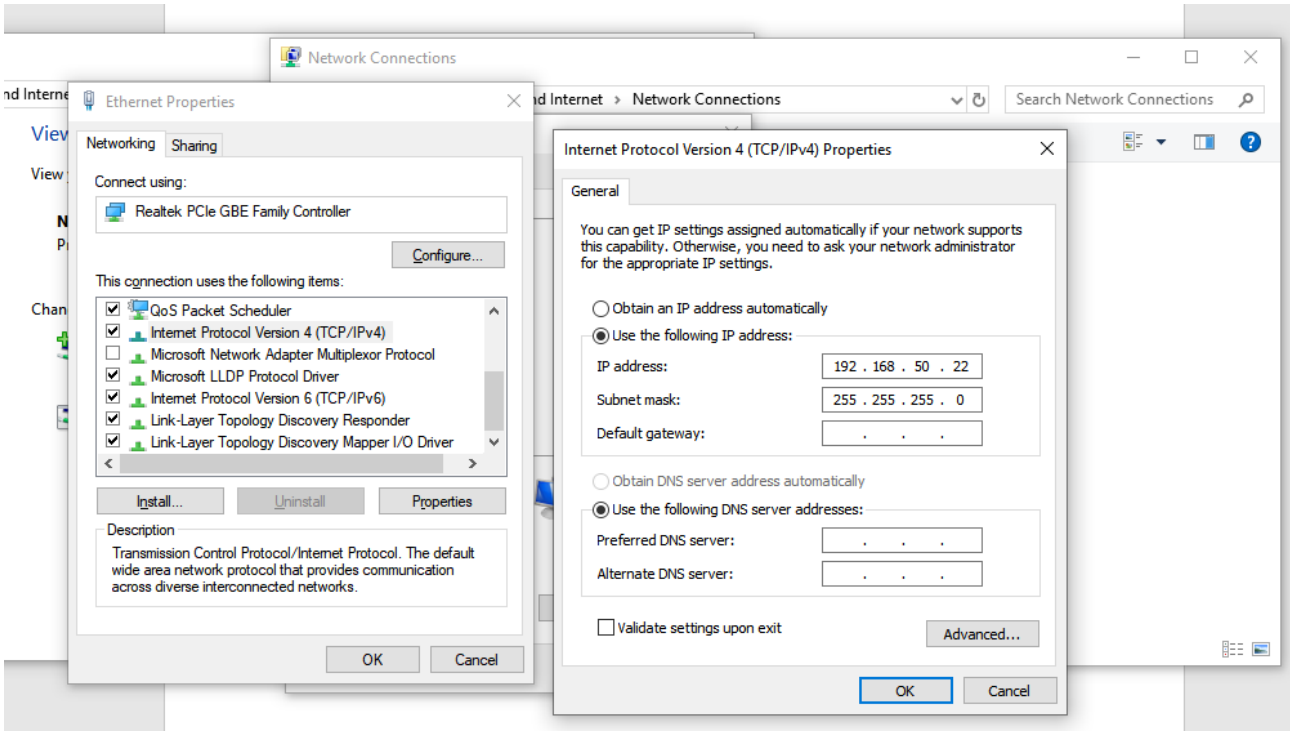
IZVOĐENJE VJEŽBE

Sve postupke detaljno opisati u bilježnicu.

1. U naredbenom retku pročitati mrežne postavke računala (naredbom ipconfig/all). U bilježnicu zapisati pridružene mrežne postavke.

```
C:\Users\ucenik>ipconfig/all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : WS10_LAB_2_3
   Primary Dns Suffix  . . . . . . . :
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No

Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Realtek PCIe GBE Family Controller
   Physical Address. . . . . . . . . : 70-85-C2-CE-9A-DC
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::4ef:9da9:7b:d2a8%5(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.50.22(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Lease Obtained. . . . . . . . . . : 14. studenog 2022. 14:32:11
   Lease Expires . . . . . . . . . . : 14. studenog 2022. 15:02:11
   Default Gateway . . . . . . . . . : 192.168.50.5
   DHCP Server . . . . . . . . . . . : 192.168.50.5
   DHCPv6 IAID . . . . . . . . . . . : 40928706
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-25-20-17-B8-70-85-C2-CE-9A-DC
   DNS Servers . . . . . . . . . . . : 192.168.50.5
                                       193.198.184.130
                                       193.198.184.140
   NetBIOS over Tcpip. . . . . . . . : Enabled

Ethernet adapter Npcap Loopback Adapter:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Npcap Loopback Adapter
   Physical Address. . . . . . . . . : 02-00-4C-4F-4F-50
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::710f:6bbc:5967:de27%10(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.137.1(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :
   DHCPv6 IAID . . . . . . . . . . . : 201457740
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-25-20-17-B8-70-85-C2-CE-9A-DC
   DNS Servers . . . . . . . . . . . : fec0:0:0:ffff::1%1
                                       fec0:0:0:ffff::2%1
                                       fec0:0:0:ffff::3%1
   NetBIOS over Tcpip. . . . . . . . : Enabled
```

2. Statički pridružiti mrežne postavke računala za rad u lokalnoj mreži i pristup Internetu.
    - Odabrati statičko pridruživanje mrežnih postavki računala



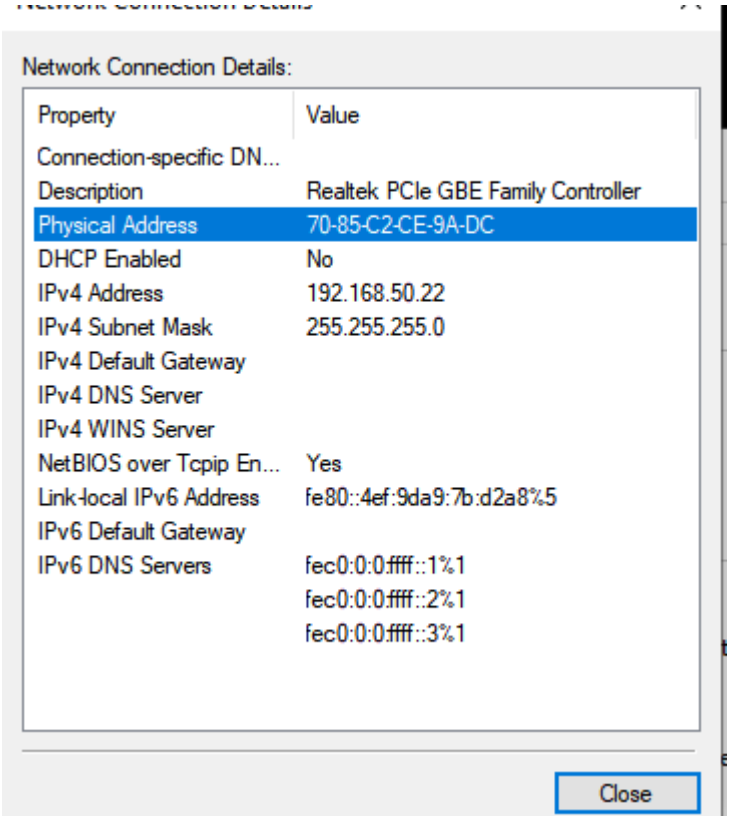
    - Pridružiti IPv4 mrežne postavke za pristup Internetu

```
C:\Users\ucenik>ping 192.168.50.22

Pinging 192.168.50.22 with 32 bytes of data:
Reply from 192.168.50.22: bytes=32 time<1ms TTL=128
Reply from 192.168.50.22: bytes=32 time<1ms TTL=128
Reply from 192.168.50.22: bytes=32 time<1ms TTL=128
Reply from 192.168.50.22: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.50.22:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

- Provjeriti mrežne postavke računala

```
C:\Users\ucenik>ipconfig /all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : WS10_LAB_2_3
   Primary Dns Suffix  . . . . . . . :
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : No
   WINS Proxy Enabled. . . . . . . . : No

Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Realtek PCIe GBE Family Controller
   Physical Address. . . . . . . . . : 70-85-C2-CE-9A-DC
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::4ef:9da9:7b:d2a8%5(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.50.22(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :
   DHCPv6 IAID . . . . . . . . . . . : 40928706
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-25-20-17-B8-70-85-C2-CE-9A-DC
   DNS Servers . . . . . . . . . . . : fec0:0:0:ffff::1%1
                                       fec0:0:0:ffff::2%1
                                       fec0:0:0:ffff::3%1
   NetBIOS over Tcpip. . . . . . . . : Enabled

Ethernet adapter Npcap Loopback Adapter:

   Connection-specific DNS Suffix  . :
   Description . . . . . . . . . . . : Npcap Loopback Adapter
   Physical Address. . . . . . . . . : 02-00-4C-4F-4F-50
   DHCP Enabled. . . . . . . . . . . : No
   Autoconfiguration Enabled . . . . : Yes
   Link-local IPv6 Address . . . . . : fe80::710f:6bbc:5967:de27%10(Preferred)
   IPv4 Address. . . . . . . . . . . : 192.168.137.1(Preferred)
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :
   DHCPv6 IAID . . . . . . . . . . . : 201457740
   DHCPv6 Client DUID. . . . . . . . : 00-01-00-01-25-20-17-B8-70-85-C2-CE-9A-DC
   DNS Servers . . . . . . . . . . . : fec0:0:0:ffff::1%1
                                       fec0:0:0:ffff::2%1
                                       fec0:0:0:ffff::3%1
   NetBIOS over Tcpip. . . . . . . . : Enabled
```

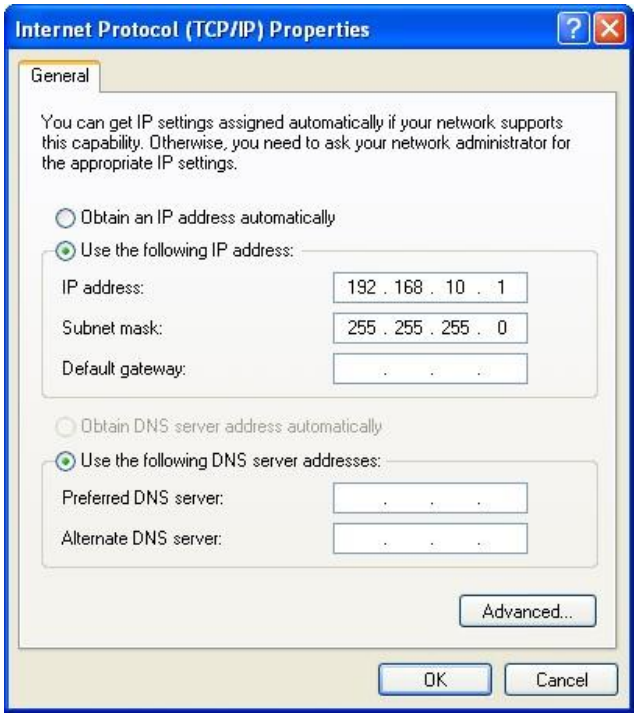
- Pročitati fizičku adresu mrežnog adaptera



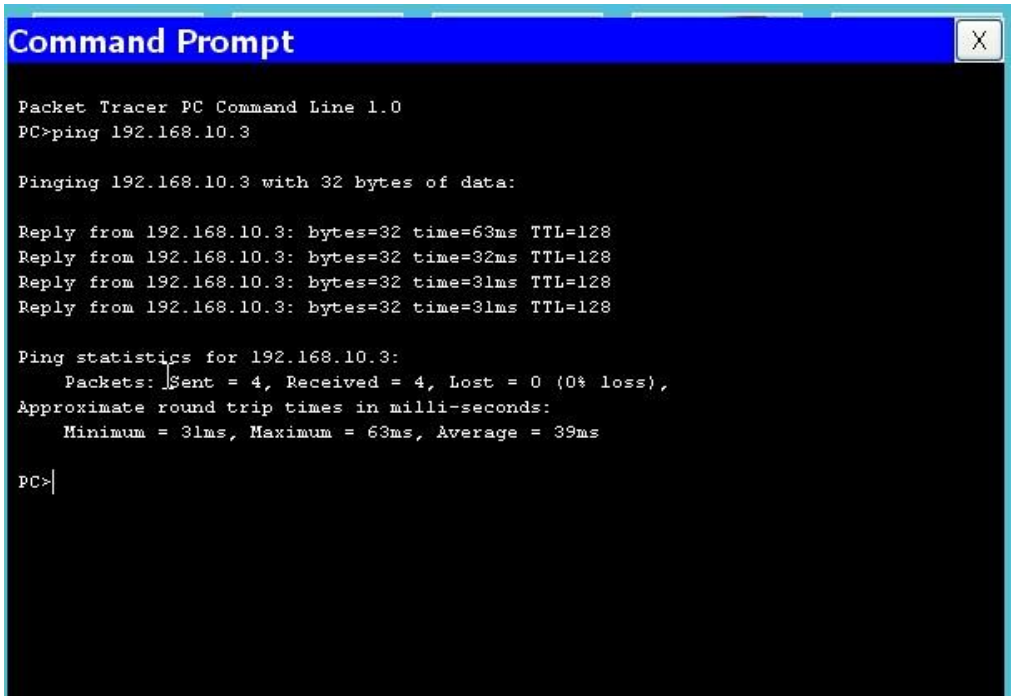
- Provjeriti pristup Internetu

Postupak:

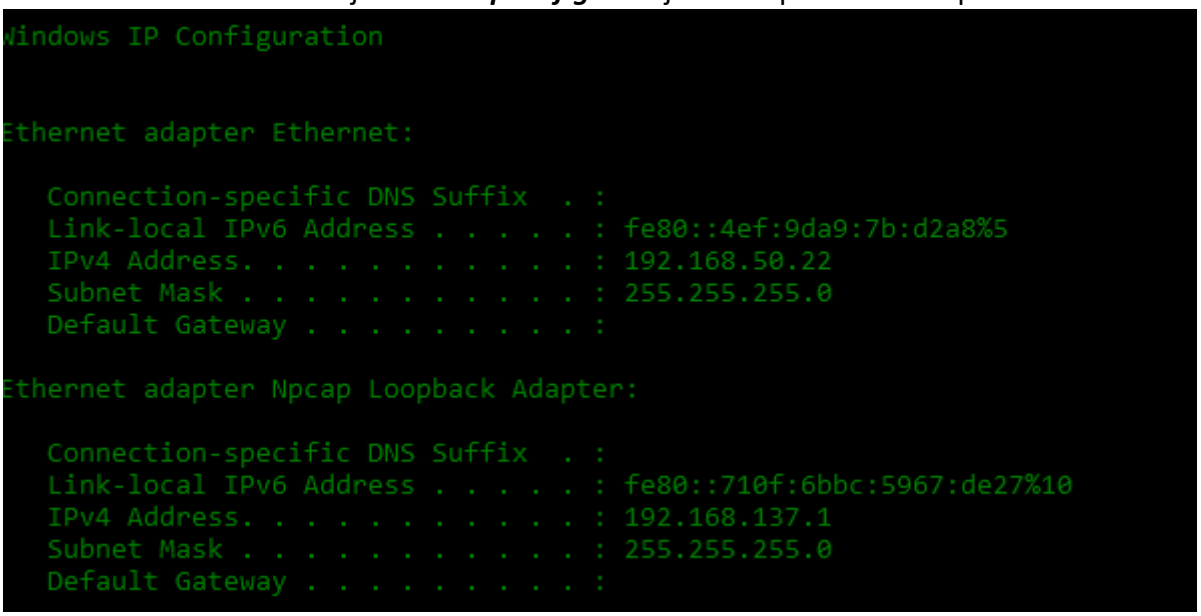
Start > Upravljačka ploča > Mrežne veze > Local Area Connection (dvoklik) > Properties > Internet Protocol (TCP/IP) (dvoklik) > *upiši IP adresu i subnet masku*



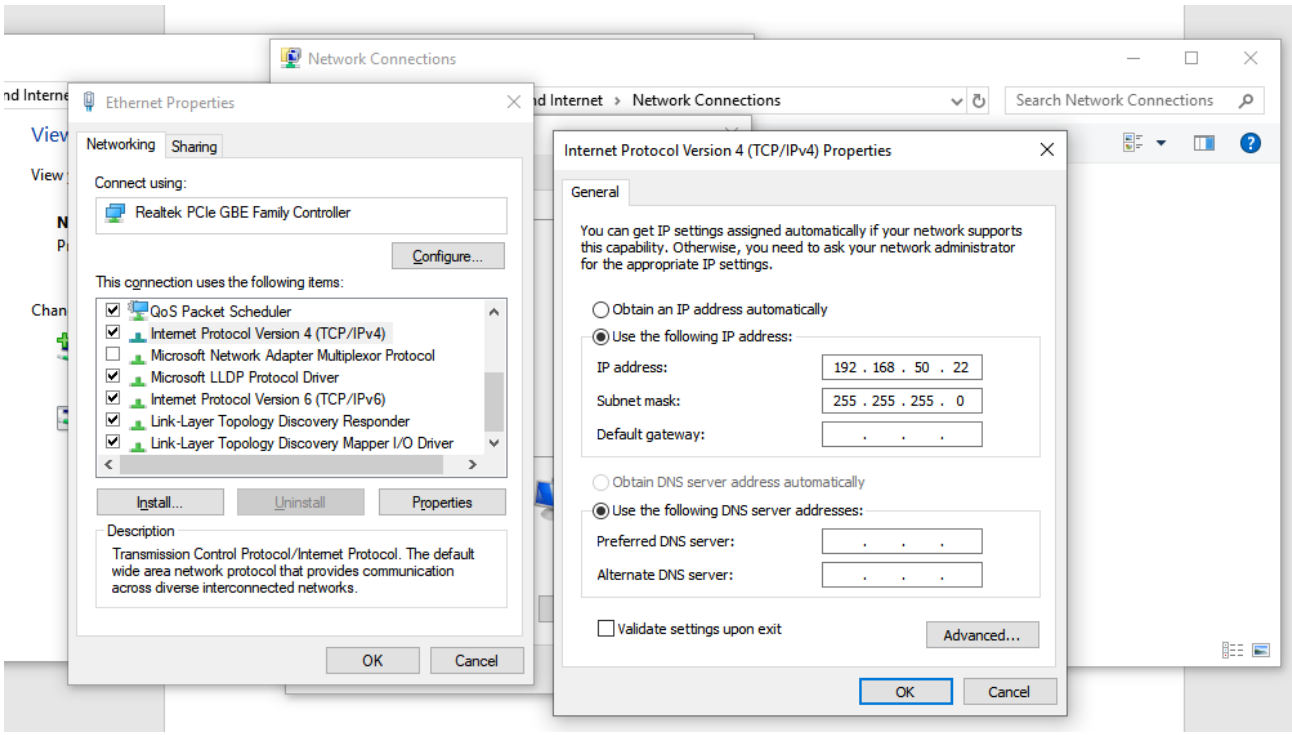
U Naredbenom retku (Command Prompt) (Start > Pomagala > Naredbeni redak), pinganjem provjeri ispravnost veze.
Ako ste dobili prikaz kao na slijedećoj slici, pinganje je bilo uspješno. Zapiši i prouči sadržaj ekrana. Koje podatke možete iščitati?



U naredbenom retku ukucaj naredbu ***ipconfig***. U bilježnicu upiši rezultat ispisan na ekranu.



3. Dinamički pridruži mrežne postavke računala za rad u lokalnoj mreži i pristup Internetu.
    - Odabrati dinamičko pridruživanje mrežnih postavki računala



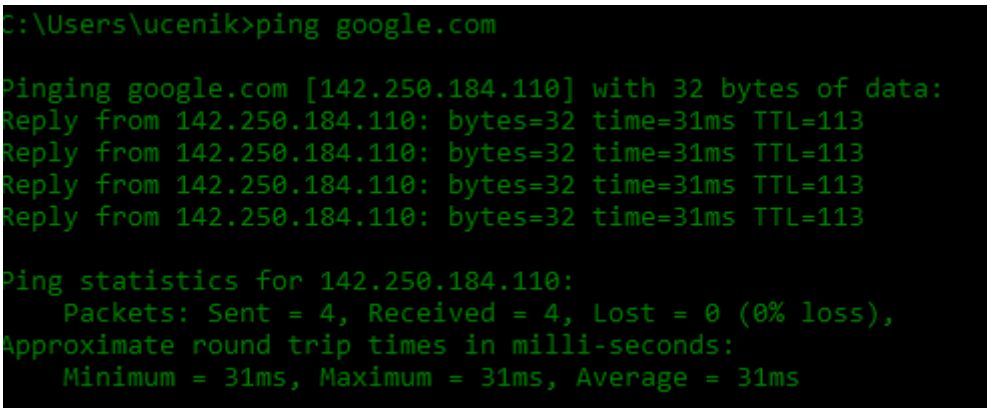
- Naredbom ping provjeriti **ispravnost TCP/IP protokola i mrežne kartice** na vašem računalu. Koju je naredbu potrebno koristiti?

```
C:\Users\ucenik>ping 127.0.0.1

Pinging 127.0.0.1 with 32 bytes of data:
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128
Reply from 127.0.0.1: bytes=32 time<1ms TTL=128

Ping statistics for 127.0.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

- Naredbom ping provjeriti dostupnost standardnog izlaza (engl. Default Gateway)

```
C:\Users\ucenik>ping 192.168.50.5

Pinging 192.168.50.5 with 32 bytes of data:
Reply from 192.168.50.5: bytes=32 time<1ms TTL=64
Reply from 192.168.50.5: bytes=32 time<1ms TTL=64
Reply from 192.168.50.5: bytes=32 time<1ms TTL=64
Reply from 192.168.50.5: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.50.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

- Provjeriti pristup Internetu



Nakon obavljenih zadataka u ovoj vježbi učenik će znati samostalno (ili uz manju pomoć zabilješki):

- Podesiti IPv4 mrežne postavke na računalu i provjeriti ispravnost pristupa Internetu

Provjera znanja:

1. Točni odgovori na postavljena pitanja u pripremi – 1 bod
2. Bilješke i točni odgovori na pitanja iz vježbe – 1 bod
3. Samostalno podešavanje statičkih mrežnih postavki – 2 boda
4. Samostalno podešavanje dinamičkih mrežnih postavki – 2 boda

2 b – nedovoljan , 3 b – dovoljan, 4 b – dobar, 5 b – vrlo dobar, 6 b - odličan