colorcodes
comment 009900
type 9933FF
object 9933FF
String 994C00

Java

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v1.16012021

executive version JDK 11.0.4

General Information

public	... access privilege - access from everywhere
private	... access privilege - no access from outside
protected	... access privilege - access from package only
static vs nonstatic	
static	... execute when starting the class, always usable (without creating a class), can always be only one value
nonstatic	... requires the creation of a class, before access to it
public class Helloworld{	... head of class
public Hellowolrd(){...}	... constructor
}	
void	... return type(void,String,int[], ...)
System.out.print("h w")	... functionCall(argument)
javac Helloworld.java	... command for compile Helloworld.java → H....class
java Helloworld	... command for execute H....java with H....class

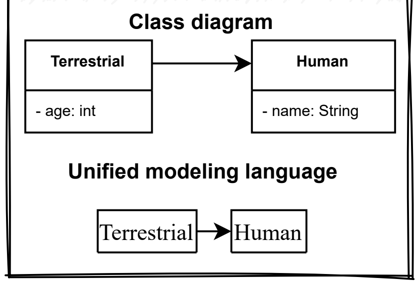
Class

```
public class Human {                                   // Human.java
  public String name;
  public Human (String name){
    this.name = name;
  }                                                    // heredity in UML
}
                                                       /* Terrestrial.java gets Human
public class Terrestrial extends Human {               attribute */
  private int age;                                     /* age is only available in this
  public Terrestrial(String name, int age){            class (private) */
    super(name);                                       // super(name) get attribut
    this.age = age;
  }

  public static void main(String[] args) {
    Terrestrial jdObject = new Terrestrial("John Doe",42);
    System.out.println(jdObject.name+" "+jdObject.age);
  }
}
         /*
         object vs class
         class:
           - blueprint, how does it work
           - won't be executed
           - can not do anything
         object:
           - concrete form of a class
           - accomplished functions
              (e.g. mercedes in my garage )
         */
```

Numbers

```
byte total = 3 * 3;                   // 9      8 bit
short total = 3 * 3;                  // 9     16 bit
int total = 3 * 3;                    // 9     32 bit
int total = 5 + 2 * 3;                // 11
                                      // 3
long total = 3L;                      // 5.25  64 bit
float total = 1.50f + 3.75f;          // 5.25  32 bit
double total = 1.50 + 3.75;                    64 bit

int total = (int)5.4 + 3;             // 8 typecast
int nine = Integer.parseInt("9")      // 9
int modulo = 9 % 2                    // 1     rest
```

UML / Class diagram



Operators

```
int a = 5 + 4;      // 9
int b = 5 - 4;      // 1
int c = 5 * 4;      // 20
int d = 5 / 4;      // 1
int e = 23 % 4      /* 3 modulo results in remainder
                    with integer division */
```

Strings

```
String name = "Pacman is yellow";                    // Pacman is yellow            object
String.valueOf(name.charAt(0));                      // P
name.length();                                       // 6
name.split(" ");                                     // ["Pacman","is","yellow"]
String.valueOf(total.split(" ")[0]);                 // Pacman
String.join("Pacman", "is", "yellow")                // Pacmanisyellow
String nine = Integer.toString(9);                   // "9"
total.replace("Pacman","Sun")                        // "Sun is yellow"

char a = 'A';                                        // A
char b = 'B';                                        // B
System.out.println(a + b);                           // 131                         16 bit
String surname = "John";                             // John
String familyname = "Doe";                           // Doe
String fullname = surname + familiyname;             // JohnDoe = Concatenate / link Strings
```

Methods

```
public class MyClass {
  public static int methodName(double n){  // public ... see also @ General Information
    return (int) n;                        // static ... see also @ General Information
  }                                        // int ... return type, only one type possible
                                           /* double n ... transfer parameter as type double, more than one
                                           parameters possible */
                                           // return ... return value, not output value!

  public static String twoDigitsAtferComma(double number) {   // String method gets a number
    String str = String.format("%.2f", number);               // formats number into String
    return str;                                               // returns String
  }                                                           // method end

  public static void main(String args[]) {
    System.out.println(twoDigitsAtferComma(4.2/2) + " Euro");  /* "2.10 Euro", twoDigitsAfterComma
                                                                method call */
    System.out.println(methodName(5.2));                       // 5 , methodName method call
  }
}
```

Java

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executive version JDK 11.0.4

While Loops

```
int i = 0;                  // counter

while(true){                // As long as true
  i++;                      // i increment by 1
  if(i == 2){
     continue;              // go to next loop
  }
  if(i == 4){
     break;                 // end loop
  }
  System.out.print(i);  //  13
}
```

For Loops

```
int[] number = { 6, 5, 4, 3, 2, 1 };          // int Array

for (int i = 0; i < number.length; i++) {     /*  654321, access to
  System.out.print(number[i]);                location of i in array
}                                             */

int[] number = { 1, 2, 3, 4, 5, 6 };
for (int i : number) {                        // for each
  System.out.print(i);                        //  123456
}
```

Lists

```
int[] numbers = {2,4,1};                  // int array → immutable

         index = 0   index = 1   index = 2 // index = location of number
double[] numbers;                         // double array
char[] letters = {'Y','E','S'};           // char array one-dimensional
int[][] matrix;                           // int array two-dimensional
int[][][][]  matrix_4x_4x;                // int array four-dimensional
int[] empty = new int[5];                 // {0,0,0,0,0}
int[][] empty2 = new int[2][2];           // { {0,0} , {0,0} }
numbers.length                            // 3
```

Heredity

```
public class Terrestrial extends Human {}
```

```
public interface Polygon{} ... Polygon.java
public interface Circle{} ... Circle.java
public class Geometry implements Polygon, Circle{} ... Geometry.java
```

```
public abstract Animal{} ... Animal.java
public class Dog implements Animal{} ... Dog.java

/*
extends (normal heredity of classes) - only one super class
implements (heredity interfaces) - use as much interfaces as you need

interfaces: completely abstract, methods don't have a body
abstract classes: can be normal or abstract = methods that are always the same can get a
body, there are no objects create-able, see also @ Override
 */
```

Imports / Java-packages

```
import java.util.Scanner;       // Scanner: used to intercept user input
import java.math.*;             // used for e.g. randomized numbers
  math.random(5);               // 0...5
  math.pow(5,2);                // 5^2 calculates potentiates
  math.round(5.9999);           //  6
import java.util.Arraylist;
  ArrayList<String> cars = new ArrayList<String>();
  cars.add("Volvo");
import java.lang.Exception;     //  see also @ Exceptions
import java.lang.Throwable;     //  see also @ Exceptions
```

Enum

```
public enum Color                              /* brief list
{                                              of various
  black, red, yellow, unknown;                 acceptable
}                                              values */
```

Exceptions

```
try {                                                   /* try ... catch ...
  int i = scanner.nextInt();                            try to do this (i) and
}
catch(InputMismatchException ime) {                     if error occurs handle this  with output
  System.out.println("Please enter an Integer");        "Please enter an Integer"
}
                                                        this program could go ahead*/


if(i<10){
  throw new IllegalArgumentException("wrong number");   /* throw error
}                                                       if i >= 10 output "wrong number"
                                                        this program stops immediately
                                                        */
```

Override

```
@Override                                  /* overwrites methods of parent class e.g. to give the
                                           method a body in the interface */
public interface Polygon{
  public int acreage;
  public int perimeter;
}

                                           /*
public class Polygon{                      public abstract class Polygon {
  @Override                                  int a;
  public int acreage(){                      int b;
    return a * b;                            public Polygon(int a, int b){
  };                                           public int acreage;
  public int perimeter(){                      public int perimeter(){
    return 2 * (a + b);                          return a + b;
  }                                            }
}                                          */
```

Conditional Statements

```
boolean truth_value = true;   // true
                              // boolean ... express truth value true or false
double temp = 40;
if(temp <= 4){                                        // if(condition){do something}
   System.out.println("Winter is coming!");           // smaller than or equal to 4
} else if(temp > 4 && temp < 8){
   System.out.println("Fall is coming!");             // greater than 4 AND smaller than 8
} else if ((temp == 9) || (temp == 10)){              // = assignment, == boolean operator
   System.out.println("Fall is here!");               // 9 OR 10
} else if (!(temp < 11)){                             // NOT smaller than 11
   System.out.println("Climate change is here");      // "Climate change is here"
}

int weekday = 3;
String day;

switch (weekday) {                                    // switch(condition){
  case 1:                                             //    case condition:
    day = "Monday";                                   //       do something;
    break;                                            //       until break; ...}
  case 2:
    day = "Tuesday";
    break;
  default:
    day = "no saved day";                             // if condition is false do something
    break;                                            // break is necessary, otherwise loop
}
/*
!(x && y) is same as !x || !y
!(x || y) is same as !x && !y
!(a < 3 && b == 10) is same as a >= 3 || b != 10
*/

int a = 4;                                            // && = sequential conjunction
int b = 5;                                            //     || = sequential disjunction
if(a > 0 && b > 0){                                   /* sequential ... first I evaluate partial
}                                                     statements & then adjust the result */

int a = 4;                                            // & = strict conjunction
int b = 5;                                            //    | = strict disjunction
if(a > 0 & b > 0){                                    /* strict ... I evaluate statements from
}                                                     left to right and note partials */

int a = 4;
// int b = 5;
if(a > 0 & b > 0){   // int b == 'UNDEFINED';         // causes error
}
// true && true → works
// true & true → works
// true && UNDEFINED → works
// true & UNDEFINED → error
```

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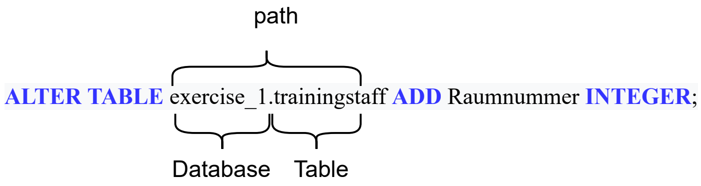
executive version Server-Version: 10.1.38-MariaDB



```
ALTER TABLE exercise_1.trainingstaff ADD Raumnummer INTEGER;
```

Strings

```
SELECT * FROM products;                                        /* show all entries from products */
SELECT DISTINCT Games FROM products;                           /* show all unique entries from products */
SELECT * FROM products WHERE Price > 40;                       /* show all entries from products, if Price bigger than 40 € */
                                                               /* show all entries from products, if Price bigger than 40 € and
SELECT * FROM products WHERE Price > 40 AND Price < 100;       Preis smaller than 100 € */

CREATE TABLE events AS SELECT Subject, Roomnumber FROM trainingstaff;   /* create events take all data of column Subject and
                                                               Roomnumber from table trainingstaff*/
SELECT * FROM exercise_5.nobelist WHERE nobelist_name LIKE 'Louis%';    /* Select all with Surname Louis */
SELECT * FROM exercise_5.nobelist WHERE nobelist_name LIKE '%s%';       /* Select all which contain small s in their names */
```

Change attributes

```
ALTER TABLE exercise_1.trainingstaff ADD Roomnumber INTEGER;   /* set INTEGER Value to DOUBLE with 6 digits before comma and 2 digits after
                                                               comma */
ALTER TABLE exercise_1.trainingstaff MODIFY Age DOUBLE(6,2);   /* set INTEGER Value to Float with 5 digits before comma and 2 digits after
                                                               comma */
ALTER TABLE exercise_1.trainingstaff MODIFY Age FLOAT(5,2);    /* set Foreign Key to Column Studio from Table studio of Studio */

ALTER TABLE exercise_2.products ADD CONSTRAINT Studio FOREIGN KEY (Studio) REFERENCES studio(Studio);

ALTER TABLE exercise_4.trainingstaff ADD FOREIGN KEY (salesmen_ID) REFERENCES exercise_4.staff(staff_ID);

                                                               /*
                                                                The FOREIGN KEY constraint is used
                                                                 - to prevent actions that would destroy links between tables.
                                                                 - prevents invalid data from being inserted into the foreign key column,
                                                                   because it has to be one of the values contained in the table it points to.
                                                               */
```

Check changes

```
SELECT products.Games, products.Price, studio.Studio, studio.Headcount FROM products LEFT JOIN studio ON products.Studio = studio.Studio     /* checks Foreign Key */
```

DELETE / DROP

```
DELETE FROM events WHERE Roomnumber ='120';                    /* delete all rows which contain
                                                               Roomnumber with value 120 */
ALTER TABLE events DROP COLUMN Roomnumber ;                    /* delete COLUMN Roomnumber*/
DROP DATABASE excersie2;                                       /* delete whole database */
ALTER TABLE exercise_2.products DROP FOREIGN KEY studio;       /* removes Foreign Key */
```

INSERT

```
INSERT INTO exercise_1.trainingstaff VALUES('Baller','Programming',29);
INSERT INTO exercise_1.trainingstaff VALUES('Zanker','Programming',22);
```

Codd's 12 rules

Rule 0: The foundation rule
Rule 1: The information rule
Rule 2: The guaranteed access rule
Rule 3: Systematic treatment of null values
Rule 4: Dynamic online catalog based on the relational model
Rule 5: The comprehensive data sublanguage rule
Rule 6: The view updating rule
Rule 7: Possible for high-level insert, update, and delete
Rule 8: Physical data independence
Rule 9: Logical data independence
Rule 10: Integrity independence
Rule 11: Distribution independence
Rule 12: The nonsubversion rule

Comments

```
/* beginn comment
comment
end */

-- comment line
```

CREATE

```
CREATE DATABASE exercise_1;                 /* creates related database  */
SET NAMES utf8 ;                            /* use for the names charset utf8 */
SET CHARACTER_SET_CLIENT = utf8mb4 ;        /* use for communication with the client utf8, utf8mb4 = MySQL UTF-8 */
CREATE TABLE trainingstaff (                /* builds a table, named trainingdtaff */
  Name VARCHAR(20) PRIMARY KEY,             /* Name, Subject, Age =  variable names */
  Subject VARCHAR(50) NOT NULL,             /* VARCHAR, INT = data typ, VARCHAR(20) String with 20 digits */
  Age INT(2) CHECK(Age>18)                  /* PRIMARY KEY allows access to row */
);
```

Data types

```
BIT                                         /* short numbers like 0 or 1 in range of 1 to 64 */
INT or INTEGER                              /* numbers in range of  -2.147.483.648 to 2.147.483.647 */
FLOAT                                       /* floating point number 32 bit, 7 digits e.g. 4.2 */
DOUBLE                                      /* normal size floating point number 64 bit, 15-16 digits*/
DECIMAL                                     /* exact fixed-point number 128 bit, 28-29 significant digits */

CHAR(10) or CHARACTER(10)                   /* strings  with fixed length, in this case 10 digits */
VARCHAR(20) or CHARACTER VARYING (20)       /* strings  with variable length, in this case 20 digits */
FLOAT(2)                                    /* 54321.1 */
FLOAT(3,2)                                  /* 1.12 */
DOUBLE(5,2)                                 /* 312.12 */
DECIMAL(4,2)                                /* 21 */
DECIMAL(4,2)                                /* 21.12 */

constraint                                  /* used to specify rules for the data in a table */
NOT NULL                                    /* must be defined */
```

General Information

```
CREATE TABLE trainingstaff (               /* single enumerations are separated by a comma , */
  Name VARCHAR(20) PRIMARY KEY,            /* commands are separated by a semicolon ; */
  Subject VARCHAR(50),
  Age INT(2)
);
```

Broadcast / Net-ID

IPv4 40.15.200.232 / 12

Network identifier

Host identifier

Host identifier = 20

numbers of possible devices = 2^{20} - 2 = 1.048.574

↑

1x NID
1x Broadcast

IP $_{bin}$	0010100	0001111	11001000	11101000
SN $_{bin}$	11111111	11110000	00000000	00000000
NID $_{bin}$ $\wedge$	00101000	00000000	00000000	00000000
$\neg$SN $_{bin}$	00000000	00001111	11111111	11111111
BC $_{bin}$ $\vee$	00101000	00001111	11111111	11111111
NID $_{dec}$	40	0	0	0
BC $_{dec}$	40	15	255	255

Form subnets

NID IPv4 21.213.192/18 We need 9 subnets.

	NID	BC	Step Length
SN1	21.213.192.0	21.213.195.255	1024 bit
SN2	21.213.196.0	21.213.199.255	1024 bit
SN3	21.213.200.0	21.213.203.255	1024 bit
SN4	21.213.204.0	21.213.207.255	1024 bit
SN5	21.213.208.0	21.213.211.255	1024 bit
SN6	21.213.212.0	21.213.215.255	1024 bit
SN7	21.213.216.0	21.213.220.255	1024 bit
SN8	21.213.220.0	21.213.223.255	1024 bit
SN9	21.213.224.0	21.213.227.255	1024 bit

HowTo calculate Step Length(SL)

9 (SN) + 2 = 10

need at least 16 bit = 2^4

18 (SN $_{CIDR}$ Network identifier) + 4 = 22

→ 32-22 = 10 = 2^{10} Host identifier

→ SL = 1.024

HowTo calaculate last SN

9 (SN $_{need\ to\ form}$) - 1 = 8 (SN)

8 * 1.024 = 8.192 ... 4. octet

8.192 / 256 = 32 ... 3. octet

192 + 32 = 224

21.213.192.0 → 21.213.224.0 + 1024
= 21.213.227.255

IP address classes

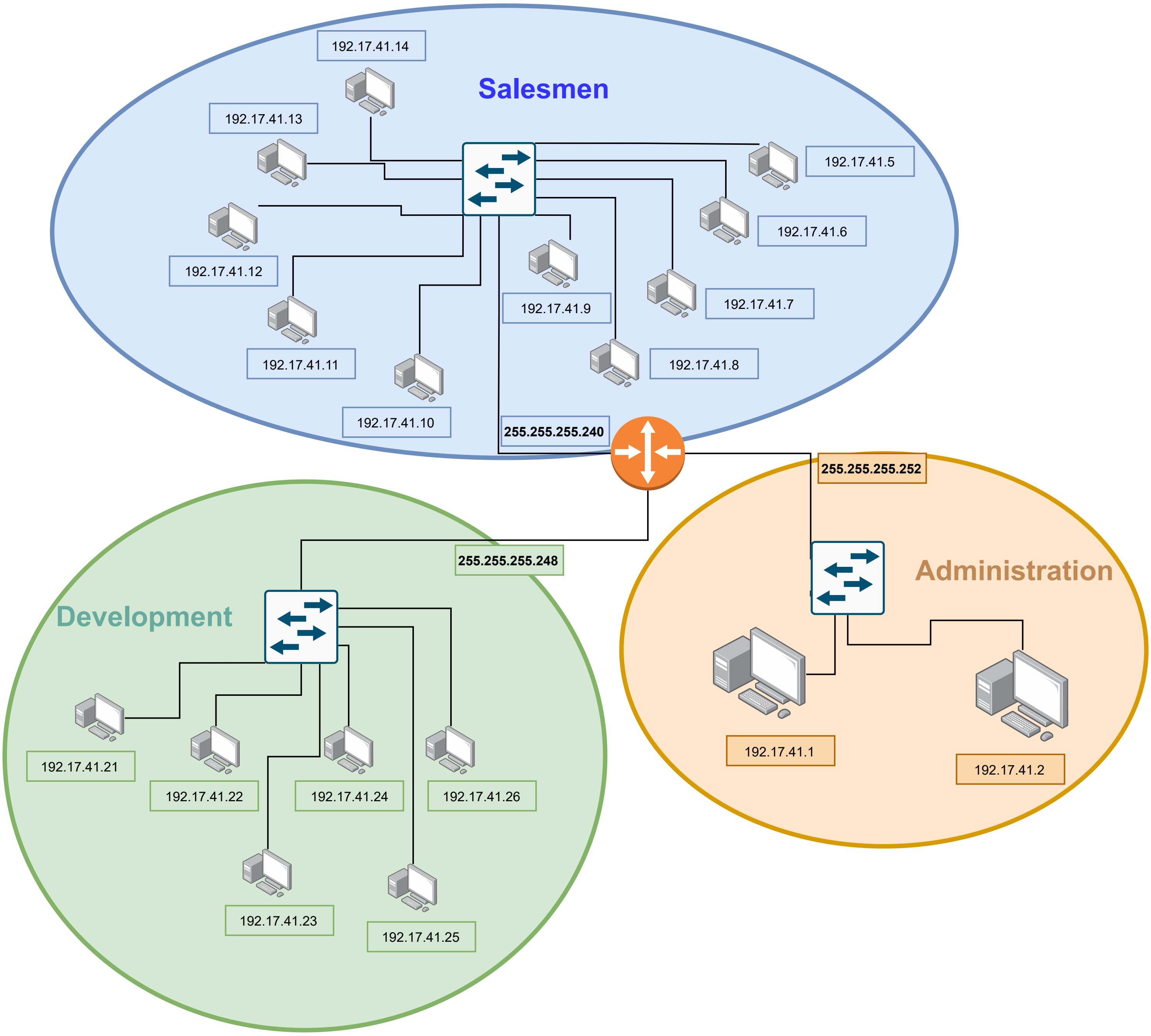
Class	from	to	Network bits	Host bits	Number of networks	address per network
Class A	0.0.0.0	127.255.255.255	8 (7)	24	128	16.700.000
Class B	128.0.0.0	191.255.255.255	16 (14)	16	16.384	65.536
Class C	192.0.0.0	223.255.255.255	24 (21)	8	2.097.152	256
Class D	224.0.0.0	239.255.255.255	Multicast address	Multicast address	Multicast address	Multicast address

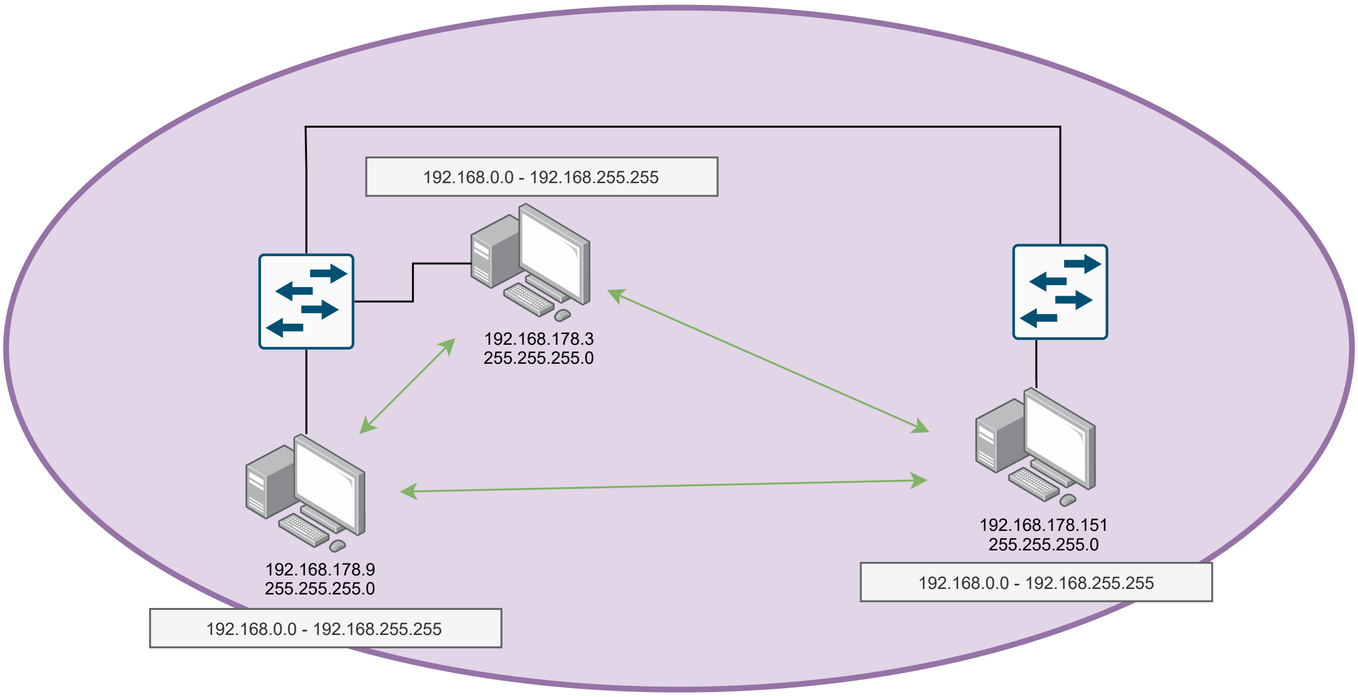
Subnet

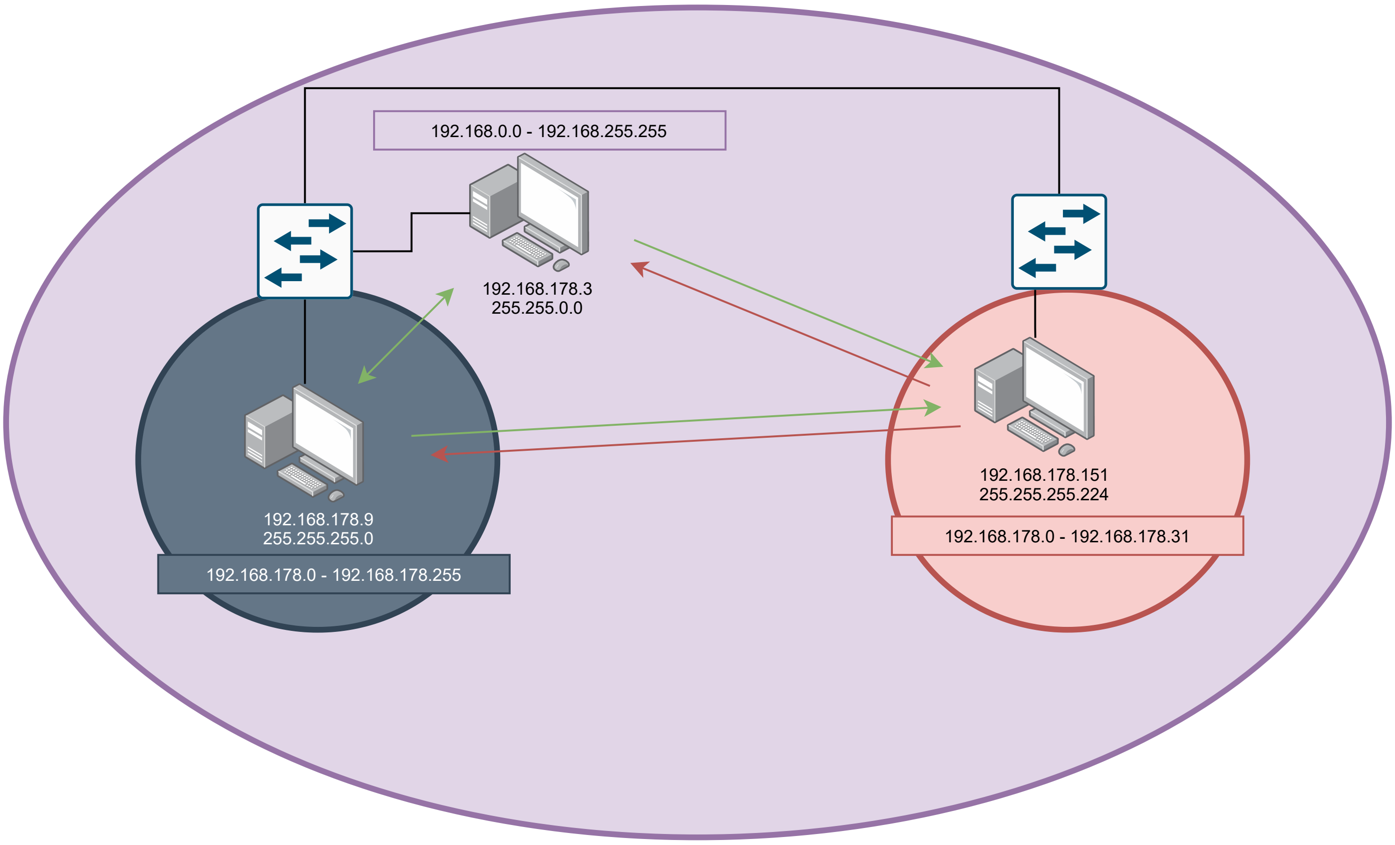
Classless **I**nter **D**omain **R**outing **CIDR**, allows Subnetting and Supernetting.

Start Point 196.17.41.0/26

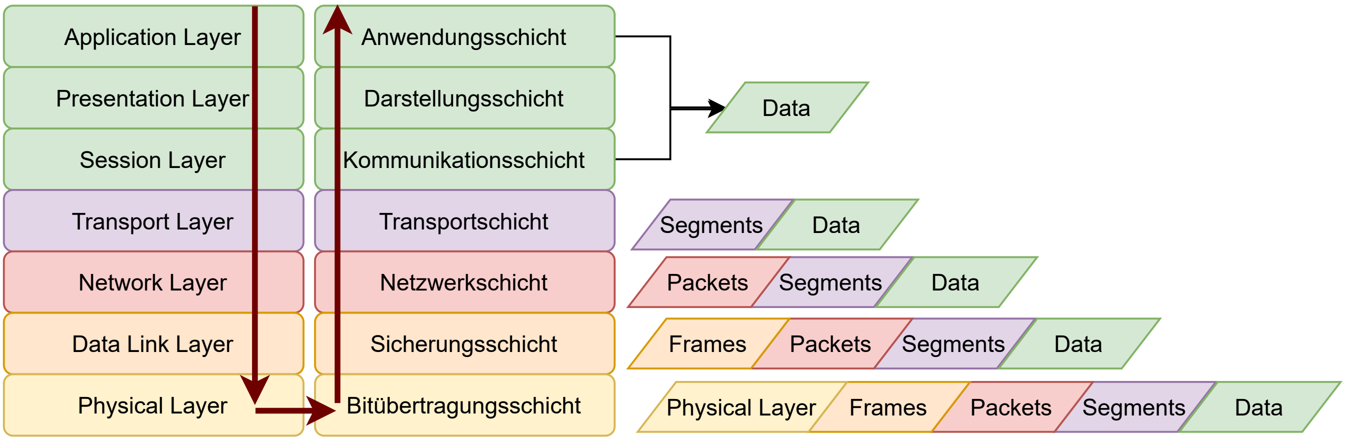
Department	**nHost**	**Network Identifier**	**Host Identifier**	**Host$_{max}$**	**Step Length**	**Network**	**First Host Address**	**Last Host Address**	**Broadcast Address**
Administration	2(IP) + 1(NID) + 1(BC) = 4 = 2^2	32(SN) - 2 = 30	2	4	**2^2 = 4 Bit**	**196.17.41.0/30**	196.17.41.1	196.17.41.2	**196.17.41.3**
Salesmen	8(IP) + 1(NID) + 1(BC) = 10 = 2^4 10 < 16 | 10 > 8	32(SN) - 4 = 28	4	16	**2^4 = 16 Bit**	**196.17.41.4/28**	196.17.41.5	196.17.41.18	**196.17.41.19**
Development	6(IP) + 1(NID) + 1(BC) = 8 = 2^3	32(SN) - 3 = 29	3	8	**2^3 = 8 Bit**	**196.17.41.20/29**	196.17.41.21	196.17.41.26	**196.17.41.27**




192.168.0.0 - 192.168.255.255
192.168.178.3
255.255.255.0
192.168.178.151
255.255.255.0
192.168.0.0 - 192.168.255.255
192.168.178.9
255.255.255.0
192.168.0.0 - 192.168.255.255

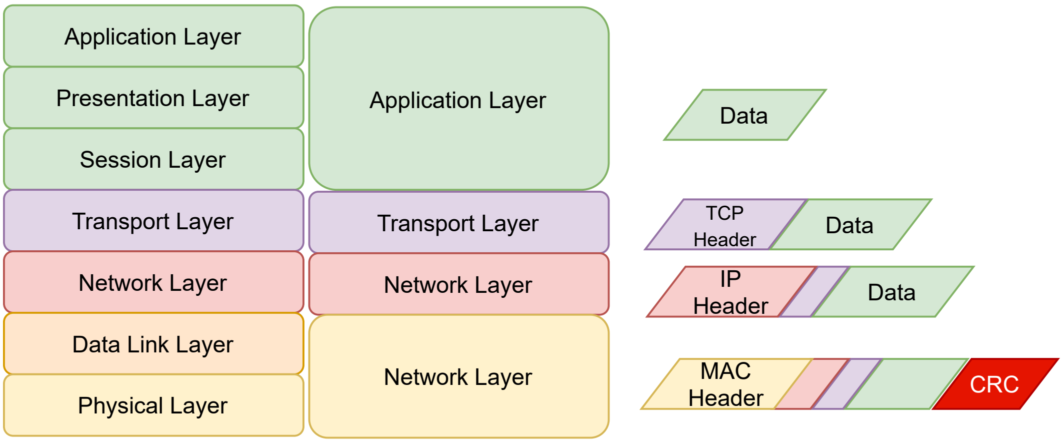

192.168.0.0 - 192.168.255.255
192.168.178.3
255.255.0.0
192.168.178.151
255.255.255.224
192.168.178.0 - 192.168.178.31
192.168.178.9
255.255.255.0
192.168.178.0 - 192.168.178.255

OSI Model



OSI Model

TCP / IP Model



Linux

v1.01012021

Shortcuts

CTRL Alt T	new Terminal
CTRL Alt F1 — F6	virtual consoles
CTRL Alt F7	console where X server is running

Navigation commands

cd	... *change directory*
clear	... clear terminal
cp -r	... *copy* include sub directories
cp testC ./testD	... *copy* testC folder in testD
ls	... *list*, show content of current directory
ls -a	... *list* all, hidden files included
ls -h	... *list* human readable
ls -l	... *list* view
ls -lh	... *list* view **AND** human readable **combined options**
ls -R	... recursive view
mkdir -p testB/{testC, testD}	... make parent directory test with 2 sub directories
mkdir testA	... *make directory* testA
mv	... *move*
pwd	... *print working directory*, where am I
rmdir -d	... *remove* empty directory
rmdir -f	... force remove
rmdir -i	... ask for remove
rmdir -r	... *remove directory* with sub directories
rmdir testA	... *remove directory* testA
touch menu.txt	... create menu.txt

Network commands

curl	... to transfer data from server using HTTP,FTP,IMAP,...
echo "nameserver 8.8.8.8" | sudo tee /etc/resolv.conf	... change DNS
hostenamectl	... info about your system
ifconfig -a	... shows network details
iwlist wlan0 scan	... *scan for available WLAN
nano /etc/network/interface	... *change network configuration
netstat	... tool to analyse a network
nmap	... tool to analyse networks
nslookup google.de	... shows each network connection
scp	... secure copy files to host or client
scp $**filename **user@targethost:/$path	... copy filename to targethost
telnet google.de 443	... teletype netwoprk, protocol for simple client - server connection
traceroute google.de	... shows pakage route to host
wget	... to transfer data from server using proxy,HTTP,HTTPS,FTP

General commands

man	... Manual
ps -aux	... more detailed process
ps -e	information
ps -e |head	... process information
pstree	...
python3	... process tree structure
top	... start python3
whatis	... real time process manager
which	... info about an app
	... where is an app

Path details

root@root:~*/testA/testB$* **python3** *../app.py*	... relative path to start python App
root@root:~*/testA/testB$* **python3** *~/testA/app.py*	... absolute path to start python App
root@root:~*/testA/testB$* ~	... go to home directory
root@root:~*/testA/testB/testC/$* **cd** ./testD	... go to testD in same path
root@root:~*/testA/testB/testC/*testD/*$* **cd** ..	... go to next suprerior path
root@root:~*/testA/testB/testC/$* **cd** ../../home	... got to second superior path

System commands

df -h	... *disc free*
du	... *disc-usage* memory consumption
du -a	... shows all memory consumption, sub directories included
du -h	... human readable sizes
umount /media/[device name]	... dismount USB devices
w	... show processes
whoami	... I accessed as ...

Permission / privileges

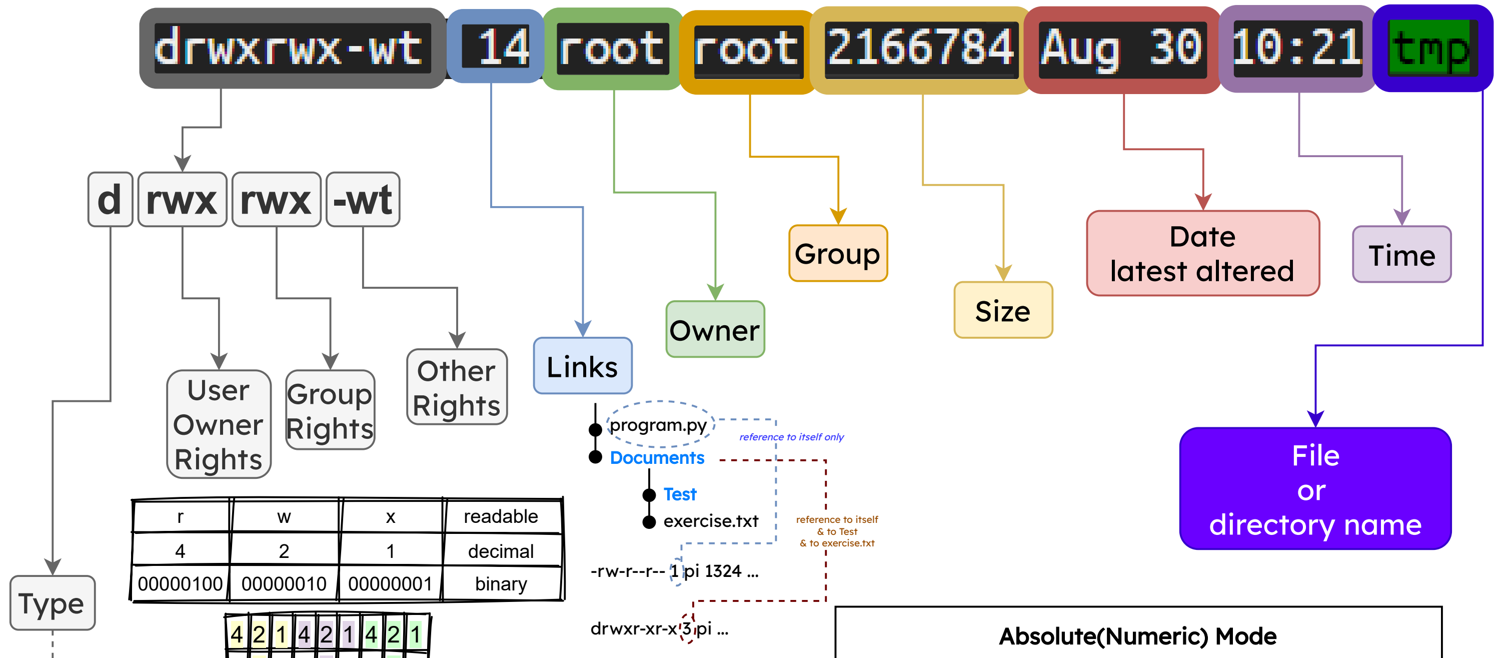
cat /etc/group	... group membership
chgrp root workfolder	... ownership from group to root
chmod {username} /workfolder/	... {username} gets ownership of workfolder
chmod permission filename	... look also @Absolute(Numeric) Mode
cut -d: -f1 /etc/passwd	... shows all users
id {username}	... informtation about the user
ls -l	... show privileges
su	... *switch to root Superuser
su -	... *switch to root User
su {username}	... {username}$ ... change to user
sudo	... *do something as user
sudo -i	... *root shell
sudo adduser {username}	... add user (with all account data, password ...)
sudo cat /etc/shadow	... *group membership
sudo groupadd {groupname}	... *add group
sudo groupdel {groupname}	... *delete group
sudo groupmod -n {old name} {new name}	... *rename group
sudo passwd {username}	... *set password(only)
sudo useradd {username}	... *add username(only)
sudo userdel {username}	... *delete user

*password required

manipulate files

cat asd.txt >> qwe.txt	... conCATenate asd.txt with qwe.txt
head -1 asd.txt	... show frist line of asd
rm -d {file}	... remove {file} directory
rm qwe.txt	... remove qwe.txt
shred qwe.txt	... remove qwe.txt
tail -1 qwe.txt	... show last line of asd
touch echo "text for file" asd.txt	... create txt file with text in it

v1.30012021



r	w	x	readable
4	2	1	decimal
00000100	00000010	00000001	binary

4	2	1	4	2	1	4	2	1
	7			7			7	

r = *Readable, read permission*
w = *Writeable, write permission*
x = *Executable, execute permission*
- = *Denied, no permission*
t *=only by owner removeable*

- = regular file
b = block device file
d = *directory*
c = charackter device
f = *file*
l = *symbolic link*
t = *sticky bit permissions*
s = local socket file
p = named pipe

4	2	0	4	2	0	4	2	0
	6			6			6	

chmod 666 file/folder means that all users can read and write but cannot execute the file/folder

Absolute(Numeric) Mode			
Binary	**Number**	**Permission Type**	**Symbol**
00000000	0	No Permission	**---**
00000001	1	Execute	**--x**
00000010	2	Write	**-w-**
00000011	3	Execute + Write	**-wx**
00000100	4	Read	**r--**
00000101	5	Read + Execute	**r-x**
00000110	6	Read + Write	**rw-**
00000111	7	Read + Write + Execute	**rwx**

Windows 10

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v1.01012021

Usefull commands

appwiz.cpl	... installed apps
certmgr.msc	... Certificates of Trusted Publisher
cleanmgr	... Clean Manager for temporary / redundant files
cmd	... command panel
compmgmt.msc	... Computer Management
control	... control panel
control userpasswords	... User Accounts Win 10 view
control userpasswords2	... User Accounts classical view
control mmsys.cpl	... Sound settings
devmgmt.msc	... Device Manager
dfrg.msc	... Disk Defragmenter
diskmgmt.msc	... Disk Management
dxdiag	... DirectX Diagnostic Tool
eventvwr.msc	... Event Viewer
fsmgmt.msc	... Shared Folders
gpedit.msc	... Group Policy
inetcpl.cpl	... Internet Properties
lusrmgr.msc	... Local users and groups
mrt	... Malicious Remove Tool
msconfig	... *System Configuration (Boot,Services,Startup,Tools,...)
msinfo32	... System Information
mstsc	... Remote Desktop Connection
netsh	... Netshell
osk	... on-screen keyboard
perfmon.msc	... Performance Monitor
regedit	... Registry Editor
rstrui	... *System Restore
secpol.msc	... *Local Security Policy
services.msc	... Services
sfc /scannow	... System File Checker
sysdm.cpl	... *change System Properties
taskmgr	... Task Manager
winver	... About Windows (Version)
wmimgmt.msc	... Windows Management Instrumentation
wscui.cpl	... Security and Maintenance

* admin access necessary

Network

netsh interface ipv4 show config	... all network config
netsh interface ipv4 set address name="Ethernet 4" **static** 192.168.1.2 255.255.255.0 192.168.1.1	... set IPv4 config via cmd
netsh interface ipv4 set address name="Ethernet 4" **source**=dhcp	... switch to DHCP SetUp

Path of commands

C:\WINDOWS\system32\restore\rstrui.exe
C:\WINDOWS\system32\cmd.exe
C:\WINDOWS\system32\cmd.exe

Search

dir /s /b *.exe | findstr /v .exe.	... **dir** list files and
	... **/s** sub folders too
	... results shall include ***.exe**
	... **findstr** check names for **.exe.**
	... **/v** and sort them out

Chrome Shortcuts

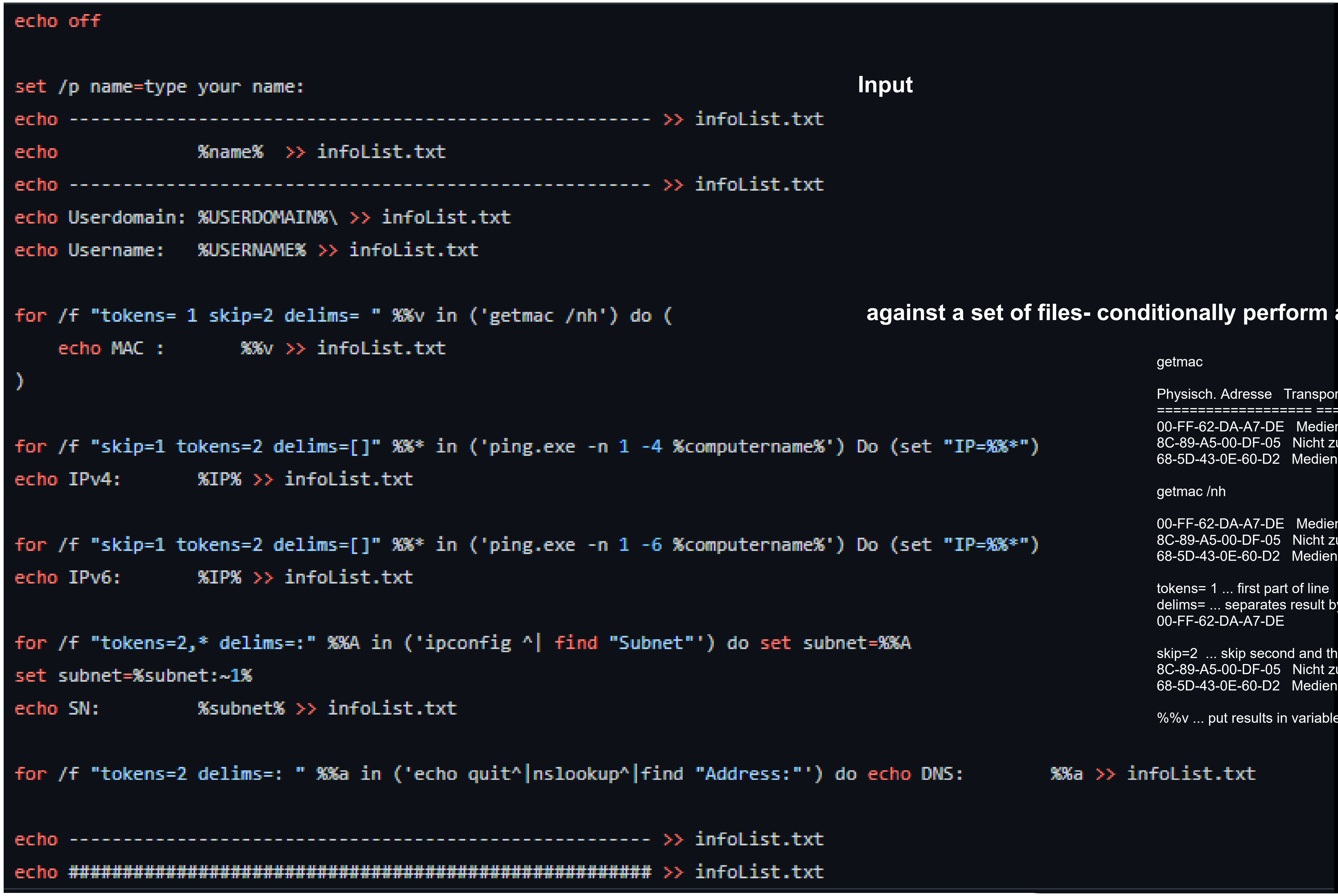
open task manager	Shift + esc
focus URL bar	F6
open new window	ctrl + N
open new tab and focus this	ctrl + T
go to next open tab	ctrl + tab
close current tab	ctrl + W || ctrl + F4
open search	ctrl + F
got to next search hit	ctrl + G

Chrome URL commands

```
view-source:http://challenge01.root-me.org/web-serveur/ch56/
```

esc
F4
F6
1
2
3
4
5
6
7
8
9
0
&
/
(
)
tab
@
tab
Q
W
E
R
T
Z
U
I
O
P
*
Shift
A
S
D
F
G
H
J
K
L
Y
X
C
V
B
N
M
,
:
ctrl
alt
enter
enter
€
\
↑
ctrl
alt gr
←
↓
→

Batch script loop analysis



```
echo off

set /p name=type your name:
echo ----------------------------------------------------- >> infoList.txt
echo             %name%  >> infoList.txt
echo ----------------------------------------------------- >> infoList.txt
echo Userdomain: %USERDOMAIN%\ >> infoList.txt
echo Username:   %USERNAME% >> infoList.txt

for /f "tokens= 1 skip=2 delims= " %%v in ('getmac /nh') do (
    echo MAC :      %%v >> infoList.txt
)

for /f "skip=1 tokens=2 delims=[]" %%* in ('ping.exe -n 1 -4 %computername%') Do (set "IP=%%*")
echo IPv4:      %IP% >> infoList.txt

for /f "skip=1 tokens=2 delims=[]" %%* in ('ping.exe -n 1 -6 %computername%') Do (set "IP=%%*")
echo IPv6:      %IP% >> infoList.txt

for /f "tokens=2,* delims=:" %%A in ('ipconfig ^| find "Subnet"') do set subnet=%%A
set subnet=%subnet:~1%
echo SN:        %subnet% >> infoList.txt

for /f "tokens=2 delims=: " %%a in ('echo quit^|nslookup^|find "Address:"') do echo DNS:       %%a >> infoList.txt

echo ----------------------------------------------------- >> infoList.txt
echo ##################################################### >> infoList.txt
```

Input

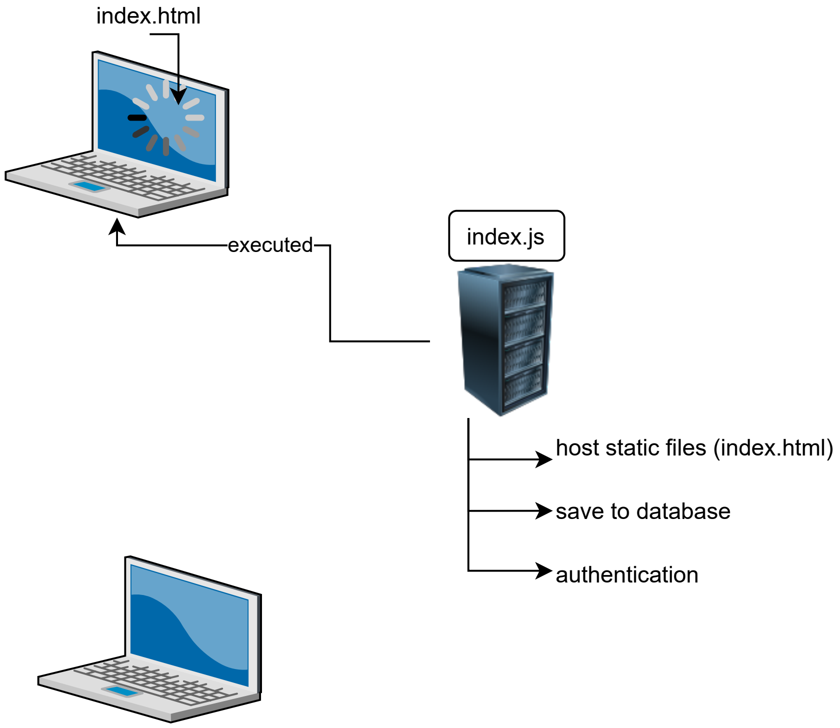
against a set of files- conditionally perform a command against each item

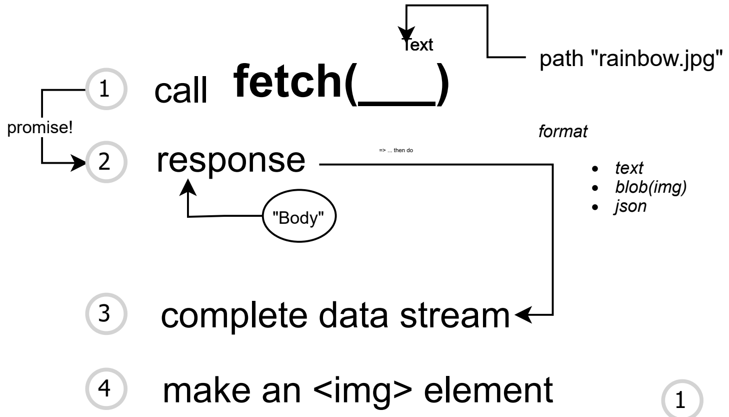
```
getmac

Physisch. Adresse   Transportname
=================== ==========================
00-FF-62-DA-A7-DE   Medien ausgeworfen
8C-89-A5-00-DF-05   Nicht zutreffend
68-5D-43-0E-60-D2   Medien ausgeworfen

getmac /nh

00-FF-62-DA-A7-DE   Medien ausgeworfen
8C-89-A5-00-DF-05   Nicht zutreffend
68-5D-43-0E-60-D2   Medien ausgeworfen
```

tokens= 1 ... first part of line
delims= ... separates result by space
00-FF-62-DA-A7-DE

skip=2 ... skip second and third line
8C-89-A5-00-DF-05 Nicht zutreffend
68-5D-43-0E-60-D2 Medien ausgeworfen

%%v ... put results in variable


index.html
index.js
executed
host static files (index.html)
save to database
authentication



Text

path "rainbow.jpg"

1 call **fetch(____)**

promise!

2 response

=> ... then do

format

- *text*
- *blob(img)*
- *json*

"Body"

3 complete data stream

4 make an <img> element

1 errors?

2 async / await