Questions 1-10

**1. What are the featuring parameters of a desktop computer today?**

A : Processors and disks are smaller in size but greater in efficiency.

„Cloud” services, reach information universal!

Smart devices, IoT (Internet of Things)

1 processor, multi (4,6,8,10,12) cores

Microprocessors – Microcontrollers

• CISC-RISC

• Nowadays microprocessors are usually 64-bit types.

• Microcontrollers are typically 8-bit types!

**2. What is the role of the cache in the microprocessor?**

A : Cache memory is a high speed memory in the CPU that is used for faster access to data. It provides the processor with the most frequently requested data. Cache memory increases performance and allows faster retrieval of data.

**3. How can you implement a number using two’s complement?**

A : Two's-complement representation

• -x = inverse x +1

• One zero, on 1 byte numbers between -128 +127.

Conversion to Two's Complement

If you have -30, and want to represent it in 2's complement, you take the binary representation of 30:

0000 0000 0000 0000 0000 0000 0001 1110

Invert the digits.

1111 1111 1111 1111 1111 1111 1110 0001

And add one.

**4. What do you know about UTF8 coding? What is it good for?**

A : UTF-8 (8-bit Unicode Transformation Format) is a variable width character encoding capable of encoding all 1,112,064(17×216 = 1,114,112 code points minus 2,048 technically-invalid surrogate code points) valid code points in Unicode using one to four 8-bit bytes. UTF-8 can support many languages and can accommodate pages and forms in any mixture of those languages. Its use also eliminates the need for server-side logic to individually determine the character encoding for each page served or each incoming form submission.

**5**. **List at least 3 memory types!**

A :

• RAM:SRAM, DRAM, DDR, DDR2,DDR3,DDR4

• ROM: PROM, EPROM, EEPROM, FLASH

• FLASH – nowadays it is used alone, cheap(er), solid-state based

**6**. **List some devices from daily life in which there are “computers”!**

A: Mobiles, smartwatches, calculators, air conditioner, washing machine, HDTVs, Thermostat, barcode readers

**7**. **What is the difference between a server and a client computer?**

A: 1. A client machine is a small computer with a basic hardware configuration whereas

a server machine is a high-end computer with an advanced hardware configuration.

2. A client is a simple and less powerful machine whereas a server is a powerful

expensive machine.

3. A client is used for simple tasks whereas a server is used for storing huge data

files and applications.

**8**. **List at least 3 operating systems!**

A : Windows, LINUX-UNIX, macOS, Mobile operating systems (iOS,Android)

**9**. **What is the difference between the ssh and the telnet connection?**

A : Telnet uses unencrypted connection but SSH uses encrypted connection. Telnet is rarely used while SSH is widely used. Telnet is a network protocol that allows a user to communicate with a remote device while SSH is a network protocol used to remotely access and manage a device.

**10** . **What kind of services has an operating system got today?**

A :

• Clients – server differences

• The usage of common, distributed data storage devices

• The usage of the common printing service

• Handling of services

• Mailing, web, terminal connections etc.

• Network services (DNS, DHCP, etc.)

• Handling of users

• Informational database

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| questions | Answers |
| 1. what do you mean by shell? Name at least two. | Shell : classical user interface program, derived from Unix system  In Windowsban it is: CMD  In Unix there are several : sh, Ksh, Csh , Csh, Bash |
| 1. What is alias and where did you meet with it? | A shell alias is a shortcut to reference a command.  For example : [] for test |
| 1. What unix file system features can you mention? | 1. It i structure is hierarchical 2. Mainly there are 2 different types of entry 3. Directory 4. File 5. Devices also get “filenames” 6. Link, special file-entry 7. Today’s version are logged, greater safety, consistency |
| 1. What type of file systems do you know? | Tree structure, several entry points in windows  Typical Unix directory elements |
| 1. What filename conventions do you know in Unix | 1. Length of name is not limited. 2. Any type of character can be used.(but it is not adviced) 3. Suggestion : do not use in names spaces, accentuated characters, special characters(\*%$ etc) 4. There is no file extension in the meaning of Windows 5. If the starting character is .(dot), then it is a sealed entry! 6. All filename are case sensitive. So filename FILENAME.txt and filename.txt are different 7. Recommended characters in filenames are : letter, numbers, dot, underscore and dash. 8. We can not have the files with the same names under the same directory(a filename must be unique in its directory ) |
| 1. What file features do you know in Unix? | Name, size, date of creation, owner, the group of owner, hard link number, permission |
| 1. Explain the base Unix permission system | 1. Basically a 3\*3 system exits (octal system) 2. To set permission : chmod 3. Handle of r,w,x permissions as 3 bit numbers 4. Default permission : 644 5. Unmask, giving bits, to which we do not give permissions 6. Additional permissions : eg: Chmod 664 apple   The answer from Wikipidia: Most file systems have methods to assign permissions or access rights to specific users and groups of users. These permissions control the ability of the users to view, change, navigate and execyte the contents of the file system |
| 1. What extended permission do you know in Unix |  |
| 19.what is the goal in Unix to use process priority | Linux, like most modern operating systems, can run multiple processes. It does this by sharing the CPU and other resources among the processes. If one process can use 100 percent of the CPU, then other processes may become unresponsive. (answer from Google but I am not sure what the question means) |
| 20 . what do you know about quotation marks in Unix | Quotation marks negotiate the meaning of space characters |
| 21.What is the meaning of stdin, stdout? | stdin - keyboard, standard input channel (default input)  stdout - monitor, standard output channel (default output) |
| 22.How many filter you need for a pipeline? | three |
| 23.Tell an example where we can use a regular expression? | Cat file | grep "^$" empty line |
| 24.What is the ASCII code table? | is a character encoding standard for electronic communication.  ASCII codes represent text in computers, telecommunications equipment, and other devices. |
| 25.What are the environment variables? | The environment variables are visible in the environment and in  each command started from the environment. |
| 26.Give the possible type(s) of a variable content in UNIX! | string (The content of a variable is always a string!) |
| 27.What is command substitution? | the command will be executed and it will be replaced with it’s output. |
| 28.List the existing operators in UNIX shell! | Arithmetic Operators  Relational Operators  Boolean Operators  String Operators  File Test Operators。 |
| 29.Which shell instruction has got a result value? | Each instructions have got a result! |
| 30.How is the logical type implemented in UNIX shell? | test operand1 operator operand2 # the space |
| 1. Is it possible to define a function using parameters in unix ? | YES |
| 1. Are you able to execute (describe how if you say yes) a shell script without execution permission | No |
| 1. What is IFS | Internal field separator |
| 1. What kind of tasks can you solve with the help of sed | Complex substitutions, replaces working on the lines  arriving on the standard input, result is written on to the  standard output. |
| 1. Describe generally the syntax of a sed command | [address] s /pattern/new\_pattern/[marker] |
| 1. What is the difference between “ and ‘ in sed? |  |
| 1. Typify the possiblities of awk | Program directly  Program is in a file  Filter |
| 38.Name the possible command blocks in awk | Print command  Build in variables  User defined functions  Variables and syntax |
| 39.Can awk be used for solving arithmetical tasks? | yes |
| 1. What is MBR and what is its task? | • Boot sector  LILO (Linux LOader) choosing an operating system |
| 1. Describe the LINUX\_UNIX boot process | configuration file  Default run level settings  What is the task in the case of the different run levels  GETTY starting |
| 1. Write down at least one Unix lunix management possibility | SMIT, YAST, YAST2 |
| 1. What kind of network connections do you know | Serial port  • Ethernet card  • WIFI card  • Bluetooth |
| 1. What do you mean by packet-switched network? | in the packet there are the  addresses of the sender and the destination, the ordinal  number of the packet, data. |
| 1. What is described by OSI model | Open Systems Interconnection  • 1. physical layer  • 2. data link layer  • 3. network layer  • 4. transport layer  • 5. session layer  • 6. presentation layer  • 7. application layer |
| 1. List network topologies | Linear topology,  Star topology,  Bus topology,  Tree topology  Ring topology |
| 1. What is the task of a switch? | Computers are devices placed at the end-points of  topologies! |
| 1. What is the task of a router | Different local and global networks are connected with the  router! |
| 1. How can you characterize the IPV4 addresses | 4 byte – max. 2^32 device  address intervals which are not routable |
| 1. Where do you meet DNS in informatics? | ping will check the  existance of the connection! |
| 51. What is DHCP? | Dynamic Host Configuration Protocol |
| 52. What kind of server access modes do you know? | IP configuration  Terminal connection  Web connection |
| 53. What is HTTP protocol good for? | You can upload or download files with the help of HTTP as well!  We can upload and download using a web-browser! |
| 54. What happens if there is no index.html file in public\_html  directory? | • If there is no index.html file, then it works as an ftp catalog! |
| 55. How can you save a web-directory with password? | htpasswd [-c] filename username  (• -c filename will be a new file  • It asks the password and writes the username and the coded password into the  file  • -c must use only first case!) |
| 56. What do you mean by virtual host? | Meaning: we can reference an address with another name |
| 57. What are the meaning of SSI or CGI permissions in case of  webservers? | SSI, CGI permissions  For a directory, .shtml extension  Mod\_userdir.conf |
| 58. What kind of Windows script writing possibilities do you know? Is  there any? | • Batch program (bases)  • Windows Script(ing) Host (VB Script or JScript based)  • PowerShell |
| 59. How can you “implement” the role of autoexec.bat in Power Shell? | creating group policy!  • Windows start up/shutdown  • User start up/shutdown |
| 60. How safe script execution is ensured in PowerShell? | Get-ExecutionPolicy  Set-ExecutionPolicy |