Unix-like Operating Systems Shell variables, aliases, text editors.

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Discussion of homework

• Any questions about homework?

Try the following commands and explain their behaviour.

```
echo PWD is $PWD

echo PWD\ is\ \ $PWD

echo "PWDuisuuuu$PWD"

echo "\$PWDuisuuu$PWD"

echo '\$PWDuisuuu$PWD'
```

Discussion of homework

• Try the following commands and explain their behaviour.

```
cmd = who
echo cmd
echo $cmd
echo "$cmd"
echo '$cmd'
echo $($cmd)
$cmd
```

• How can we protect output format of the command who?

- What types of shell variables can we distinguish and what is the difference between them?
 - Local variables: new child process will not inherit these variables from its parent process.
 - Environment variables: new child process will inherit these variables from its parent process.
- How can we temporarily create new local variable A and set its value to string "A_{□□}B_{□□}C"?

$$A = "A \sqcup \sqcup B \sqcup \sqcup C"$$

 How can we temporarily create new environment variable B and set its value to string "X_{□□}Y_{□□}Z"?

export
$$B = "X_{\sqcup \sqcup} Z_{\sqcup \sqcup} Y"$$

• Can we omit the quotes? Why yes/no?



• How to print a value of the shell variable A?

```
echo "$A"
```

- Can we omit the quotes? Why yes/no?
- How to verify that the shell variable A is defined?

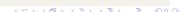
```
set | less # use /A = inside less command declare -p A
```

• How to verify that the variable B is an environment variable?

```
env | less
export -p | less
declare -p B
```

• How to destroy the shell variable B?

```
unset B
```



- How can we permanently define environment variable B?
 Hint: see section "INVOCATION" in the manual page of bash.
 - Add the setting to the shell configuration file
 ~/.profile or ~/.bash_profile.
- What is the meaning of the following builtin shell variables?

```
PATH
USER
HOSTNAME
PS1
IFS
PAGER
```

 How to change a shell prompt of the current shell to the following value?

Hello>

 How to change a shell prompt of the current shell to the following value?

```
user@hostname:pwd>
```

Where user is login name of the current user, hostname is name of the system, pwd is the current working directory.

PS1='
$$(whoami)@((hostname):(pwd)>_{\sqcup}$$
'

Aliasing

- An alias is a shorthand notation to enable you to customise and abbreviate commands.
- Aliases are not exported to subshells.
- How to list all defined aliases?

alias

• How to list alias 11?

type 11

alias 11

 How to temporarily define new alias load, which prints the number of all running processes in the system? (use pipe with ps, tail and wc)

alias load=' $ps_{\square}-e_{\square}|_{\square}tail_{\square}-n_{\square}+2_{\square}|_{\square}wc_{\square}-1$ '

• Can we omit the quotes? And why?

Aliasing

How to destroy the alias load?

unalias load

- How to define an alias permanently?
 Hint: see section "INVOCATION" in the manual page of bash.
 - Add the setting to the shell configuration file ~/.bashrc.

Text editors

- Text mode
 - vi, vim (Vi IMproved),
 - nano,
 - pico,
 - joe,
 - emacs.
- Graphics mode
 - gvim,
 - leafpad,
 - gedit (from GNOME),
 - kedit (from KDE).
- Try these editors and select your favourite editor.

Text editors

 In your favourite text editor create the shell script "s1.bash" with the following content

```
#! /bin/bash
echo "Hello_world"
date '+Today_is_%A'
```

- Change the access permission of the script by the following command chmod 755 s1.bash
- Run the script by the following command

```
./s1.bash
```

- Set values 3 and 5 to local shell variables A and B, respectively.
- How to calculate the sum of the values of A and B by the shell and print the result to the standard output?
- How to calculate the product of the values of A and B by the shell and print the result to the standard output?
- Set octal value 10 and hexadecimal value F1 to local shell variables A and B, respectively. Hint: see manual page of bash.
- How to calculate the decimal sum of the values of A and B by the shell and print the result to the standard output?

Define local shell variables A and B in the following way

```
A = " 0 1 0 1 0 " ; B = " A A "
```

- Assume that the variable A contains the binary number and variable B contains hexadecimal number.
- How to calculate the sum of the values of A and B by the shell and print the result like decimal number to the standard output?
 Hint: see manual page of bash.

 Create a subdirectory PS1_3 in your home directory by the following command

```
mkdir "$HOME/PS1_3"
```

Change the current directory by the following command

```
cd "$HOME/PS1_3"
```

Crate files by the following command

```
touch {,.}{,.,a,b,c,d,e,f,A,B,C,D,E,F}\\
{,.,a,b,c,A,B,C}.{txt,c,cpp,txt,C}
```

- Print the number of all files, that were created by previous command touch, on standard output.
- How many non hidden files (filename doesn't begin with the dot)
 with extension ".txt" have been created by command touch?

- How many files with extension ".txt" have been created by command touch?
- How many filenames contain string "aa" ?
- How many filenames begin with string "Fb" or "aC"?