

1 Adding features to the shell program

In the "code snippets" folder in the model there are three files for the shell program:

- c1.shell- prints a cursor and runs commands with arguments. •
- c2.shell – adds routing to the file. .pipe
- adds – shell3.c •

We will compile the second program:

```
gcc -o myshell shell2.c
```

We will run the program:

```
./myshell
```

We can see that the program executes commands:

```
hello: ls -l
```

And also executes commands in the background:

```
hello: ls -l &
```

and also routes output to a file:

```
hello: ls -l > file
```

Note that the parts of the command are separated by the space character.

You must add the following features (you can add functions to main):

1. Routing writing to stderr

```
hello: ls -l nofile 2> mylog
```

Adding to an existing file by >>

```
hello: ls -l >> mylog
```

As in a normal shell program, if the file does not exist, it will be created.

Built-in commands in the shell (placed before fork (placed before fork) and must be executed after them :) continue

2. Command to change the cursor:

hello : prompt = myprompt

(The command contains three words separated by two spaces)

3. The echo command that prints the arguments:

hello: echo abc xyz

will print

abc xyz

4. The command

hello: echo \$? Print

the status of the last command executed.

5. A command that changes the current working folder of the shell: hello:

cd mydir

6. A command that repeats the last command:

hello: !!

(two exclamation marks in the first word of the command)

7. Command to exit the shell:

hello: quit

8. If the user typed C-Control, the program will not finish but will print the

The message:

You typed Control-C!

If the SHELL runs another process, the start will be thrown by the system
(default behavior)

9. Option to chain several commands in a pipe. For
each command in pipe a dynamic allocation of argv is needed

10. Adding variables to the shell:

hello: \$person = David hello: echo
person person hello: echo
\$person

David

11. read command:

hello: echo Enter a string

```
read name
hello
echo $name
hello
```

12. Memory of the last commands (at least 20). Possibility to browse with the arrows: "up" and "down" (as in the real SHELL)

.13 Support for flow control, i.e. ELSE/IF. for example:

```
if date | grep Fri then echo
"Shabat Shalom" else echo "Hard
way
to go" fi
```

Typing the condition will execute **line by line**, as shown here.

After you have added the features, please run the following commands:

```
./shell
hello: date >> myfile hello: cat
myfile hello: date -u >>
myfile hello: cat myfile hello: wc -l <
myfile hello: prompt = hi:
hi: mkdir mydir hi: cd mydir hi:
pwd hi : touch file1 file2 file3
hi: ls hi: !! hi: echo abc
xyz hi: ls hi: echo
$? hi: ls
no_such_file hi: echo $? hi: ls no_such_file
2> file hi:
Control-
C hi: cat > colors.txt
```

blue

black red

red

green

blue

green

red

red

blue

Control-D hi: cat

colors.txt hi: cat colors.txt | cat

cat cat hi: sort colors.txt | uniq -c | sort -r | head -3 hi: quit

Technical notes:

All sections are mandatory for its completion, but without sections 9 and 13 the assignment will not be accepted (i.e. a score of 0), deduction of points for any other section is - 10 points. It is also mandatory to submit a proper MAKE (otherwise, the score is 0)

The assignment will be written in C/C++

The running example is for example only. In the test, it is possible to run additional commands, in a different order, and also those that repeat themselves.

Furthermore, you must **attach a text file**, containing examples of your tests.

The assignment may be checked automatically, so you must **pay attention to the syntax**. The executable file will be myshell

The assignment must be submitted including the appendices (readme, make) in a ZIP file named of the presenter. If there are two submitters then the file will happen tz_tz. (15 points if not).

Being late in submitting the assignment without a valid reason (reserves/sickness) deducts 10 points per day. If one of the two students has a valid reason, and the other does not, the deduction will be 5 points per day.

Be careful when transferring the files between different operating systems (especially windows), , dashes, or any other artifact. Make sure that you enter correct names. No .txt. If the files are submitted with wrong names, the download is 20 points.

