Study year: 2021/2022

Group 1

Midterm 1

Computer Practicum 1

Instructions:

- The midterm exam contains three assignments that are worth a total of 100 points.
- You have 45 minutes to solve the tasks.
- The use of literature, the Internet and other media are NOT permitted.
- The use of notes on one A4 sheet (written by hand) is allowed.
- Prepare the solution of each task in a (separate) document.
- Solutions (3 bash scripts) will be submitted via the e-classroom after the writing time according to the instructions you will receive from the TA.

Task 1 (40 points)

Write a bash script which takes 2 numbers M and N (where M<N holds) as the **command line arguments**.

The script should calculate and print in separate **functions**:

- (5pt) the difference/subtraction (N - M) of the two numbers;
- (5pt) the product of both numbers;
- (10pt) the sum of even numbers between N and M (including N and M);

Before calculating, the script should check:

- (5pt) that the user has entered two arguments;
- (5pt) that M and N are indeed numbers;
- (5pt) that the first number (M) is less than the second (N);

if something from the above doesn't apply, print the error message and exit the script with status 1 (5pt).

Example 1:

```
user@bash: ./task1.sh 2 16
The difference between 16 and 2 is 14.
The product of 2 and 16 is 32.
The sum of even numbers between 2 and 16 is 72.
```

Example 2:

```
user@bash: ./task1.sh a 1
Error: The arguments are not numbers. Please provide numbers.
```

Example 3:

```
user@bash: ./task1.sh 10 2
Error: First number is not lower than the second. Provide two
numbers where the first one is lower than the second.
```

Example 4:

```
user@bash: ./task1.sh 23
Error: Not enough arguments. Provide two numbers as arguments.p
```

Task 2 (35 points)

Write a script that does the following:

- (3pt) asks the user for a folder name;
- (5pt) if the folder exists in the current working directory, delete the folder's contents without deleting the entire folder;
- (3pt) if the folder does not exist, create one;
- (8pt) ask the user for a file name, save the file inside the folder you have created in the previous step;
- (5pt) set read and write permissions on the file for the current user, but no permission for all the other users;
- (5pt) make your script write a full detailed output of the files and folders available inside the given folder into the file you have created.

(6pt) The folder name or the file name shouldn't contain any spaces or dashes. Display an error message if the user entered a name with spaces or dashes and exit.

Example 1:

```
user@bash: ./task2.sh
Please enter the name of the folder: testFolder
Please enthe the name of the file: testFile.txt

Contents of the testFile.txt
-rw-rw-r--  1  user  user  56  dec  4  16:25  .
-rw-rw-r--  1  user  user  56  dec  4  16:25  ..
-rw-------   1   user   user   56   dec   4   16:25   testFile.txt
```

Example 2:

```
user@bash: ./task2.sh
Please enter the name of the folder: test folder

Error: name of the folder shouldn't contain any spaces or
dashes.
```

Task 3 (25 points)

Write a script which does the following:

- (5pt) Saves the home directory content in a long-form (containing user rights, file sizes, etc.) to the `vsebina.txt` file.
- (5pt) Displays the contents of the `vsebina.txt` file on the screen.
- Using the `grep` command find (in the `vsebina.txt` file):
  - (5pt) all entries that represent the **directory**,
  - (5pt) all entries that end with **.sh**
  - (5pt) all files (but not directories) of **size 0 bytes**.

Example:

```
user@bash: ./task3.sh
Contents of the vsebina.txt file:
-rwxrw-r-x  1  user  user    56  nov  17   10:32  datoteke.txt
-rwxrw-r-x  1  user  user     0  nov  17   10:33  new_test.sh
drwxr-xr-x  7  user  user  4096  okt  18   2017  Desktop
dr-xr-xr-x  5  user  user  4096  nov  11   2017  Vaje
-rwxr-xr-x  1  user  user    12  okt  18   6:48  direkt.txt
-rw-r-xr-x  1  user  user   124  maj  10   2018  test_test.sh
dr-xr-xr-x  1  user  user     0  nov  26   2018  Test.sh
-rw-r-xr-x  1  user  user     0  dec  18   2018  naloga3.txt

Directories are:
drwxr-xr-x  7  user  user  4096  okt  18   2017  Desktop
drwxr-xr-x  5  user  user  4096  nov  11   2017  Vaje
drwxr-xr-x  1  user  user     0  nov  26   2018  Test

Entries ending with .sh:
-rwxrw-r-x  1  user  user     0  nov  17  10:33  new_test.sh
-rw-r-xr-x  1  user  user   124  maj  10   2018  test_test.sh
dr-xr-xr-x  1  user  user     0  nov  26   2018  Test.sh

Files (but not directories) with the size 0 bytes
-rwxrw-r-x  1  user  user     0  nov  17  10:33  new_test.sh
-rw-r-xr-x  1  user  user     0  dec  18   2018  naloga3.txt
```

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Group 2

Midterm 1

Computer Practicum 1

Instructions:

- The midterm exam contains three assignments that are worth a total of 100 points.
- You have 45 minutes to solve the tasks.
- The use of literature, the Internet and other media is NOT permitted.
- The use of notes on one A4 sheet (written by hand) is allowed.
- Prepare the solution of each task in a (separate) document.
- Solutions (3 bash scripts) will be submitted via the e-classroom after the writing time according to the instructions you will receive from the TA.

Task 1 (25 points)

Write a script which does the following:

- (5pt) Saves the home directory content in a long-form (containing user rights, file sizes, etc.) to the `vsebina.txt` file.
- (5pt) Displays the contents of the `vsebina.txt` file on the screen.
- Using the `grep` command find (in the `vsebina.txt` file):
  - (5pt) all entries that represent the **file**,
  - (5pt) all entries that end with **.txt**
  - (5pt) all files (but not directories) of **size 0 bytes**.

Example:

```
user@bash: ./task1.sh
Contents of the vsebina.txt file:
-rwxrw-r-x  1  user  user    56  nov  17  10:32  datoteke.txt
-rwxrw-r-x  1  user  user     0  nov  17  10:33  new_test.sh
drwxr-xr-x  7  user  user  4096  okt  18   2017  Desktop
dr-xr-xr-x  5  user  user  4096  nov  11   2017  Vaje
-rwxr-xr-x  1  user  user    12  okt  18   6:48  direkt.txt
-rw-r-xr-x  1  user  user   124  maj  10   2018  test_test.sh
dr-xr-xr-x  1  user  user     0  nov  26   2018  Test.sh
-rw-r-xr-x  1  user  user     0  dec  18   2018  naloga3.txt

Files are:
-rwxrw-r-x  1  user  user    56  nov  17  10:32  datoteke.txt
-rwxrw-r-x  1  user  user     0  nov  17  10:33  new_test.sh
-rwxr-xr-x  1  user  user    12  okt  18   6:48  direkt.txt
-rw-r-xr-x  1  user  user   124  maj  10   2018  test_test.sh
-rw-r-xr-x  1  user  user     0  dec  18   2018  naloga3.txt

Entries ending with .txt:
-rwxrw-r-x  1  user  user    56  nov  17  10:32  datoteke.txt
-rwxr-xr-x  1  user  user    12  okt  18   6:48  direkt.txt
-rw-r-xr-x  1  user  user   124  maj  10   2018  test_test.txt
-rw-r-xr-x  1  user  user     0  dec  18   2018  naloga3.txt

Files (but not directories) with the size 0 bytes
-rwxrw-r-x  1  user  user     0  nov  17  10:33  new_test.sh
-rw-r-xr-x  1  user  user     0  dec  18   2018  naloga3.txt
```

Task 2 (35 points)

Write a script that does the following:

- (3pt) asks the user for a folder name;
- (5pt) if the folder exists in the current working directory, delete the folder's contents without deleting the entire folder;
- (3pt) if the folder does not exist, create one;
- (8pt) ask the user for a file name, save the file inside the folder you have created in the previous step;
- (5pt) set read and write permissions on the file for the current user, but no permission for all the other users;
- (5pt) make your script write a full detailed output of the files and folders available inside the given folder into the file you have created.

(6pt) The folder name or the file name shouldn't contain any spaces or dashes. Display an error message if the user entered a name with spaces or dashes and exit.

Example 1:

```
user@bash: ./task2.sh
Please enter the name of the folder: testFolder
Please enthe the name of the file: testFile.txt

Contents of the testFile.txt
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-rw-rw-r--  1  user  user  56  dec  4  16:25  ..
-rw-------   1   user   user   56   dec   4   16:25   testFile.txt
```

Example 2:

```
user@bash: ./task2.sh
Please enter the name of the folder: test folder

Error: name of the folder shouldn't contain any spaces or
dashes.
```

Task 3 (40 points)

Write a bash script which takes 2 numbers M and N (where M<N holds) as the **command line arguments**.

The script should calculate and print in separate **functions**:

- (5pt) the summation of the two numbers;
- (5pt) the remainder of division of both numbers;
- (10pt) the sum of odd numbers between N and M (including N and M);

Before calculating, the script should check:

- (5pt) that the user has entered two arguments;
- (5pt) that M and N are indeed numbers;
- (5pt) that the first number (M) is less than the second (N);

if something from the above doesn't apply, print the error message and exit the script with status 1 (5pt).

Example 1:

```
user@bash: ./task3.sh 2 16
The sum of 16 and 2 is 18.
The remainder of division of 16 and 2 is 0.
The sum of odd numbers between 2 and 16 is 63.
```

Example 2:

```
user@bash: ./task3.sh a 1
Error: The arguments are not numbers. Please provide numbers.
```

Example 3:

```
user@bash: ./task3.sh 10 2
Error: First number is not lower than the second. Provide two
numbers where the first one is lower than the second.
```

Example 4:

```
user@bash: ./task3.sh 23
Error: Not enough arguments. Provide two numbers as arguments.
```