TECHNICKÁ UNIVERZITA V LIBERCI
Fakulta mechatroniky, informatiky a mezioborových studií

Company administration

Semestrální práce ALG2

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Zadání

Zapište program pro správu zaměstnanců společnosti. Data společnosti budou zapsána v souboru typu YAML. Tato data se načtou spolu s inicializací aplikace. Data jsou složena z názvu společnosti a seznamu zaměstnanců. Každý zaměstnanec má atributy id, jméno, příjmení, pohlaví, datum narození a pracovní pozici. Po načtení dat bude umožněno uživateli, aby mohl vypsat stav celé společnosti, přidávat nové zaměstnance, odebírat zaměstnance, seřazovat zaměstnance podle jména, nebo podle věku, exportovat současný stav zaměstnanců zpět do souboru typu YAML, zobrazit nápovědu k programu a ukončit program.

Pro provozní účely je dále třeba vytvořit logger, který bude zaznamenávat běh programu. Logger bude mít 3 úrovně nastavení - debug, info a error. Tato prednastavená hodnota logovací úrovně se bude načítat při inicializaci programu z binárního souboru. Logy se budou zapisovat do textového souboru ve složce *log*.

Funkční specifikace

1. Načíst počáteční stav společnosti
2. Načíst konfiguraci loggeru
3. Zápis logů o běhu programu do textového souboru
4. Správa zaměstnanců společnosti
    4.1. Zobrazení aktuálního seznamu
    4.2. Přidání nového zaměstnance
    4.3. Odebrání existujícího zaměstnance
    4.4. Seřazení zaměstnanců
        4.4.1. Podle jména
        4.4.2. Podle věku
        4.4.3. Podle ID

Popis struktury souborů
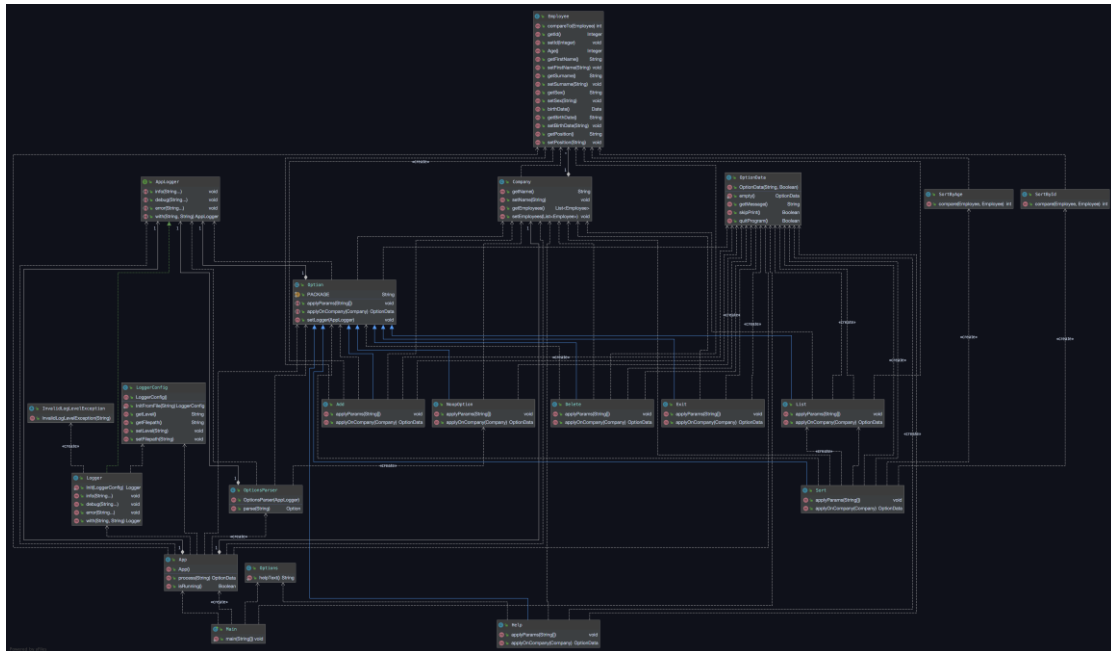
Data společnosti jsou zapsaná v souboru *./data/company.yaml* ve formátu

```
1    name: Sample company
2    employees:
3      - id: 1
4        firstName: Robert
5        surname: Newman
6        sex: male
7        birthDate: 13.2.1973
8        position: People OPS
```

Konfigurační soubor obsahuje název úroveň logování v binární formě (série znaků).

UML diagram

Testovací data

Vstup 1

list
add Harrison Ford male 13.7.1942 Actor
add Anne Hathaway female   12.11.1982 Actress
sort --age
delete 1
delete 2
delete 3
delete -12
sort --first_name
export
exit

Výstup 1

Company options:

list	Lists whole company
add [first name] [surname] [male|female] [birth date (dd.mm.yyyy)] [position]	Creates new employee
delete [id]	Deletes employee with specified id
sort --first_name	Sort employees by first name
sort --age	Sort employees by age
export	Export current state of company to YAML file
exit	Exit the program
help	Show this help text

```
>
Company name: "Sample company"
Employees:
- id: 1
 first_name: "Robert"
 surname: "Newman"
 sex: "male"
 age: 47
 position: "People OPS"
- id: 2
 first_name: "Luke"
 surname: "Skywalker"
 sex: "male"
 age: 30
 position: "Key account manager"
- id: 3
 first_name: "Darth"
 surname: "Wader"
 sex: "male"
 age: 96
 position: "Key account manager"

> New employee with id 263694774 was created
> New employee with id 1039532291 was created
> Sorted by age:
Company name: "Sample company"
Employees:
- id: 2
```

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```
  first_name: "Luke"
  surname: "Skywalker"
 sex: "male"
  age: 30
  position: "Key account manager"
- id: 1039532291
  first_name: "Anne"
  surname: "Hathaway"
 sex: "female"
  age: 37
  position: "Actress"
- id: 1
  first_name: "Robert"
  surname: "Newman"
 sex: "male"
  age: 47
  position: "People OPS"
- id: 263694774
  first_name: "Harrison"
  surname: "Ford"
 sex: "male"
  age: 77
  position: "Actor"
- id: 3
  first_name: "Darth"
  surname: "Wader"
 sex: "male"
  age: 96
  position: "Key account manager"

> Employee deleted
> Employee deleted
> Employee deleted
> Employee with id -12 was not found
> Sorted by first name:
Company name: "Sample company"
Employees:
- id: 1039532291
  first_name: "Anne"
  surname: "Hathaway"
 sex: "female"
  age: 37
  position: "Actress"
- id: 263694774
  first_name: "Harrison"
  surname: "Ford"
 sex: "male"
  age: 77
  position: "Actor"

> Company exported to src/Cermak_ALG2_sem_Company/data/export.yaml
> Quitting...
```

Export 1

```
 1     ---
 2     name: "Sample company"
 3     employees:
 4     - id: 593461157
 5       firstName: "Anne"
 6       surname: "Hathaway"
 7       sex: "female"
 8       birthDate: "12.11.1982"
 9       position: "Actress"
10     - id: 775860424
11       firstName: "Harrison"
12       surname: "Ford"
13       sex: "male"
14       birthDate: "13.07.1942"
15       position: "Actor"
16
```

Log 1 (s úrovní *debug*)

log_level="debug" time="2020-05-25 10:31:20" company_name="Sample company" first_name="Robert" surname="Newman" sex="male" birth_date="Tue Feb 13 00:00:00 CET 1973" position="People OPS"
log_level="debug" time="2020-05-25 10:31:20" company_name="Sample company" first_name="Luke" surname="Skywalker" sex="male" birth_date="Mon Jan 01 00:00:00 CET 1990" position="Key account manager"
log_level="debug" time="2020-05-25 10:31:20" company_name="Sample company" first_name="Darth" surname="Wader" sex="male" birth_date="Sat Aug 04 00:00:00 CET 1923" position="Key account manager"
log_level="info" time="2020-05-25 10:31:23" processing="list"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option_name="list"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" params="[]"
log_level="info" time="2020-05-25 10:31:23" processing="add Harrison Ford male 13.7.1942 Actor"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option_name="add"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" params="[Harrison, Ford, male, 13.7.1942, Actor]"
log_level="info" time="2020-05-25 10:31:23" parser="OptionsParser" option="add" new_employee_id="775860424"
log_level="info" time="2020-05-25 10:31:23" processing="add Anne Hathaway female   12.11.1982 Actress"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option_name="add"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" params="[Anne, Hathaway, female, 12.11.1982, Actress]"
log_level="info" time="2020-05-25 10:31:23" parser="OptionsParser" option="add" new_employee_id="593461157"
log_level="info" time="2020-05-25 10:31:23" processing="sort --age"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option_name="sort"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" params="[--age]"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option="sort" flag="--age"
log_level="info" time="2020-05-25 10:31:23" processing="delete 1"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option_name="delete"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" params="[1]"
log_level="info" time="2020-05-25 10:31:23" parser="OptionsParser" option="delete" deleted="1"
log_level="info" time="2020-05-25 10:31:23" processing="delete 2"

```
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option_name="delete"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" params="[2]"
log_level="info" time="2020-05-25 10:31:23" parser="OptionsParser" option="delete" deleted="2"
log_level="info" time="2020-05-25 10:31:23" processing="delete 3"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option_name="delete"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" params="[3]"
log_level="info" time="2020-05-25 10:31:23" parser="OptionsParser" option="delete" deleted="3"
log_level="info" time="2020-05-25 10:31:23" processing="delete -12"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option_name="delete"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" params="[-12]"
log_level="error" time="2020-05-25 10:31:23" parser="OptionsParser" option="delete" not_found="-12"
log_level="info" time="2020-05-25 10:31:23" processing="sort --first_name"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option_name="sort"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" params="[--first_name]"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option="sort" flag="--first_name"
log_level="info" time="2020-05-25 10:31:23" processing="export"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option_name="export"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" params="[]"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option="export" export="exported"
log_level="info" time="2020-05-25 10:31:23" processing="exit"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" option_name="exit"
log_level="debug" time="2020-05-25 10:31:23" parser="OptionsParser" params="[]"
log_level="info" time="2020-05-25 10:31:23" exit="true"
```

Vstup 2

```
dfobindofinbd
add dfiuv dfiuvdfiu dfviubdfbu dfbdbj bdbjk
sort dfovbdf
sort -age
delete dfbdfv
exit
```

Výstup 2

```
Company options:
list                                   Lists whole company
add [first name] [surname] [male|female] [birth date (dd.mm.yyyy)] [position]    Creates new employee
delete [id]                            Deletes employee with specified id
sort --first_name                      Sort employees by first name
sort --age                             Sort employees by age
export                                 Export current state of company to YAML file
exit                                   Exit the program
help                                   Show this help text


>
Option `dfobindofinbd` is invalid. Try <help>
> Invalid parameters for option `add`. Try <help>
> Invalid parameters for option `sort`. Try <help>
> Invalid parameters for option `sort`. Try <help>
> Invalid parameters for option `delete`. Try <help>
> Quitting...
```

Log 2 (s úrovní *error*)

```
log_level="error" time="2020-05-25 11:24:37" parser="OptionsParser" invalid_option="dfobindofinbd"
log_level="error" time="2020-05-25 11:24:37" parser="OptionsParser" option="add" invalid_params="[dfiuv,
dfiuvdfiu, dfviubdfbu, dfbdbj, bdbjk]"
log_level="error" time="2020-05-25 11:24:37" parser="OptionsParser" invalid_parameters="[dfiuv, dfiuvdfiu,
dfviubdfbu, dfbdbj, bdbjk]"
log_level="error" time="2020-05-25 11:24:37" parser="OptionsParser" option="sort"
invalid_params="[dfovbdf]"
log_level="error" time="2020-05-25 11:24:37" parser="OptionsParser" invalid_parameters="[dfovbdf]"
log_level="error" time="2020-05-25 11:24:37" parser="OptionsParser" option="sort" invalid_params="[-age]"
log_level="error" time="2020-05-25 11:24:37" parser="OptionsParser" invalid_parameters="[-age]"
log_level="error" time="2020-05-25 11:24:37" parser="OptionsParser" option="delete"
invalid_params="[dfbdfv]"
log_level="error" time="2020-05-25 11:24:37" parser="OptionsParser" invalid_parameters="[dfbdfv]"
```