Национальный исследовательский университет
«Высшая школа экономики» Специальность
«Компьютерная безопасность»

Отчет
Паттерны №1
«Сортировки»

по дисциплине «Методы программирования» направления «Компьютерная безопасность»

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СКБ-182

Москва, 2021

Вариант 6. Используя паттерн Factory Method, реализовать отчет системы в разных форматах (txt, csv, xml и т.д.).

main.py

```
import psutil
import datetime
import xml.etree.ElementTree as ET
import csv

class Information_of_PC:
    def __init__(self):
        self.name_of_information = None
        self.information = None

    def CreatOfData(self, format):
        if format == 'Disk':
            self.data_of_disk()
        elif format == 'CPU':
            self.data_of_cpu()
        elif format == 'Memory':
            self.data_of_memory()
        elif format == 'PC':
            self.data_of_PC()
        else:
            print('ERROR')

    def PrintInfo(self):
        print(self.name_of_information, '\n', self.information)

    def data_of_disk(self):
        self.name_of_information = '------Disk Info------'
        self.information =
str(psutil.disk_usage('/'))+'\n'+str(psutil.disk_partitions())

    def data_of_cpu(self):
        self.name_of_information = '------CPU Info------'
        self.information = str(psutil.cpu_stats()) + '\n' + str(psutil.cpu_freq())+
'\n' + str(psutil.cpu_percent())

    def data_of_memory(self):
        self.name_of_information = '------Memory Info------'
        self.information = str(psutil.swap_memory()) + '\n' +
str(psutil.virtual_memory())

    def data_of_PC(self):
        self.name_of_information = '------PC Info------'
        self.information =
str(datetime.datetime.fromtimestamp(psutil.boot_time()).strftime("%Y-%m-%d %H:%M:%S"))
+ '\n' + str(psutil.users()) + '\n' + str(psutil.sensors_battery()) + '\n' +
str(psutil.net_connections())

class Stereliser(Information_of_PC):
    def stereliser_of_data(self, form):
        name = self.name_of_information
        information = self.information
        if form == 'txt':
            self._sterelise_to_txt(name, information)
        elif form == 'XML':
            self._serialize_to_xml(name, information)
        elif form == 'CSV':
            self._serialiser_to_csv(name, information)
        else:
            print('ERROR')

    def _sterelise_to_txt(self, name_of_information,information):
        f = open('text.txt','w')
```

```
        f.write(name_of_information + '\n')
        f.write(information + '\n')

    def _serialize_to_xml(self, name_of_information, information):
        data = ET.Element('chess')
        element1 = ET.SubElement(data, 'Opening')
        s_elem1 = ET.SubElement(element1, 'E5')
        s_elem2 = ET.SubElement(element1, 'D4')
        s_elem1.set('type', 'Accepted')
        s_elem2.set('type', 'Declined')
        s_elem1.text = name_of_information
        s_elem2.text = information
        b_xml = ET.tostring(data)
        with open("GFG.xml", "wb") as f:
            f.write(b_xml)

    def _serialiser_to_csv(self,name_of_information, information):
        text = information.split('\n')
        with open("classmates.csv", mode="w", encoding='utf-8') as w_file:
            file_writer = csv.writer(w_file, delimiter=",", lineterminator="\n")
            file_writer.writerow([name_of_information])
            for i in range(len(text)):
                file_writer.writerow([text[i]])




a = Stereliser()
a.CreatOfData('CPU')
a.stereliser_of_data('CSV')
```

Вывод программы:

classmates.csv

```
------CPU Info------
"scpustats(ctx_switches=24848682, interrupts=17932653, soft_interrupts=0,
syscalls=156664234)"
"scpufreq(current=3201.0, min=0.0, max=3201.0)"
91.7
```

text.txt

```
------Disk Info------
sdiskusage(total=350150717440, used=147293646848, free=202857070592, percent=42.1)
[sdiskpart(device='C:\\', mountpoint='C:\\', fstype='NTFS', opts='rw,fixed',
maxfile=255, maxpath=260), sdiskpart(device='D:\\', mountpoint='D:\\', fstype='FAT32',
opts='rw,fixed', maxfile=255, maxpath=260), sdiskpart(device='E:\\',
mountpoint='E:\\', fstype='NTFS', opts='rw,fixed', maxfile=255, maxpath=260),
sdiskpart(device='F:\\', mountpoint='F:\\', fstype='NTFS', opts='rw,fixed',
maxfile=255, maxpath=260), sdiskpart(device='G:\\', mountpoint='G:\\', fstype='NTFS',
opts='rw,fixed', maxfile=255, maxpath=260), sdiskpart(device='H:\\',
mountpoint='H:\\', fstype='FAT32', opts='rw,fixed', maxfile=255, maxpath=260),
sdiskpart(device='I:\\', mountpoint='I:\\', fstype='FAT32', opts='rw,fixed',
maxfile=255, maxpath=260), sdiskpart(device='J:\\', mountpoint='J:\\', fstype='',
opts='removable', maxfile=255, maxpath=260)]
```

GFG.xml

```
<chess><Opening><E5 type="Accepted">------Memory Info------</E5><D4
type="Declined">sswap(total=9788575744, used=6352134144, free=3436441600,
percent=64.9, sin=0, sout=0)
svmem(total=4151431168, available=471744512, percent=88.6, used=3679686656,
free=471744512)</D4></Opening></chess>
```