

7 File Handling

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To edit text files in Python, we write a function that assigns the content of a file to a variable as a string.

```
1 \KeywordTok{def}\NormalTok{ file\_reader(path : }\}\BuiltInTok{str}\NormalTok{) }\OperatorTok{{-}}\textgreater{}\}\BuiltInTok{str}\NormalTok{::}

2
3     \ControlFlowTok{with} \BuiltInTok{open}\NormalTok{(path, mode}\}\OperatorTok{{=}}\StringTok{"r"}\textgreater{}\}\NormalTok{, encoding}\}\OperatorTok{{=}}\StringTok{"utf-8"}\textgreater{}\StringTok{"e"}\}\NormalTok{ ) }\ImportTok{as}\NormalTok{ f:}

4 \NormalTok{    text }\}\OperatorTok{{=}}\NormalTok{ f.read()\}
5
6     \ControlFlowTok{return}\NormalTok{ text}
```

To write encrypted or decrypted text to a file in Python, we write a function that writes a string to a file.

```
1 \KeywordTok{def}\NormalTok{ file\_writer(path : }\}\BuiltInTok{str}\NormalTok{, text : }\}\BuiltInTok{str}\NormalTok{) }\NormalTok{::}

2 \NormalTok{    i }\}\OperatorTok{{=}}\DecValTok{0}
3 \NormalTok{    grouped\_text }\}\OperatorTok{{=}}\StringTok{""}
4     \ControlFlowTok{for}\NormalTok{ c }\}\KeywordTok{in}\NormalTok{ text:\}
5 \NormalTok{        i }\}\OperatorTok{{+=}}\DecValTok{1}
6         \ControlFlowTok{if}\NormalTok{ i }\}\OperatorTok{{%}}\DecValTok{50}
7 \OperatorTok{{==}}\DecValTok{0}\NormalTok{::}
8 \NormalTok{        grouped\_text }\}\OperatorTok{{+=}}\NormalTok{ c
9 \OperatorTok{{+}}\StringTok{"}\}\CharTok{\textbackslash{}n}\StringTok{"}
10 \ControlFlowTok{elif}\NormalTok{ i }\}\OperatorTok{{%}}\DecValTok{5}
11 \OperatorTok{{==}}\DecValTok{0}\NormalTok{::}
12 \NormalTok{        grouped\_text }\}\OperatorTok{{+=}}\NormalTok{ c
13 \OperatorTok{{+}}\StringTok{" "}
14 \ControlFlowTok{else}\NormalTok{::}
15 \NormalTok{        grouped\_text }\}\OperatorTok{{+=}}\NormalTok{ c}
```

```

12      \ControlFlowTok{with} \BuiltInTok{open}\NormalTok{(path, mode)\OperatorTok{|}\StringTok{\textquotesingle{}\textquotingle{}w\textquotesingle{}\textquotingle{}}\NormalTok{,
13      Tok{=}\StringTok{\textquotesingle{}\textquotingle{}utf{-}8\textquotesingle{}\textquotingle{}}\NormalTok{,
14      encoding}\OperatorTok{|}\StringTok{\textquotesingle{}\textquotingle{}}\NormalTok{) }\ImportTok{as}\NormalTok{ f:\}
15      \NormalTok{f.write(grouped\_text)}

```

To ensure that texts consist exclusively of ASCII uppercase letters, we write a function that converts all lowercase letters to uppercase and converts all umlauts to their equivalent letters. All other characters are removed.

To have all methods for processing strings available, the string module must first be imported.

```

1 \ImportTok{import}\NormalTok{ string}

1 \KeywordTok{def}\NormalTok{ text\_cleaning(text : }
2     \BuiltInTok{str}\NormalTok{}) \OperatorTok{|}\textgreater{}\textless{}\NormalTok{)
3     \NormalTok{clean }\OperatorTok{|}\NormalTok{ text.upper()
4     }\OperatorTok{|}\textbackslash{}\textbackslash{}\NormalTok{)
5     \NormalTok{.replace()\StringTok{\textquotesingle{}\textquotingle{}Ä\textquotesingle{}\textquotingle{}}\NormalTok{,
6     }\StringTok{\textquotesingle{}\textquotingle{}Æ\textquotesingle{}\textquotingle{}}\NormalTok{)
7     }\OperatorTok{|}\textbackslash{}\textbackslash{}\NormalTok{)
8     \NormalTok{.replace()\StringTok{\textquotesingle{}\textquotingle{}Ö\textquotesingle{}\textquotingle{}}\NormalTok{,
9     }\StringTok{\textquotesingle{}\textquotingle{}Œ\textquotesingle{}\textquotingle{}}\NormalTok{)
10    }\OperatorTok{|}\textbackslash{}\textbackslash{}\NormalTok{)
11    \NormalTok{.replace()\StringTok{\textquotesingle{}\textquotingle{}Ü\textquotesingle{}\textquotingle{}}\NormalTok{,
12     }\StringTok{\textquotesingle{}\textquotingle{}œ\textquotesingle{}\textquotingle{}}\NormalTok{)
13     }\OperatorTok{|}\textbackslash{}\textbackslash{}\NormalTok{)
14     \NormalTok{.replace()\StringTok{\textquotesingle{}\textquotingle{}ß\textquotesingle{}\textquotingle{}}\NormalTok{,
15     }\StringTok{\textquotesingle{}\textquotingle{}ss\textquotesingle{}\textquotingle{}}\NormalTok{)
16     }\OperatorTok{|}\textbackslash{}\textbackslash{}\NormalTok{)
17     \NormalTok{.replace()\StringTok{\textquotesingle{}\textquotingle{}}\NormalTok{)
18     }\StringTok{\textquotesingle{}\textquotingle{}}\NormalTok{)
19     }\NormalTok{.replace()\StringTok{\textquotesingle{}\textquotingle{}}\NormalTok{)
20     }\StringTok{\textquotesingle{}\textquotingle{}}\NormalTok{)
21     }\NormalTok{.replace()\StringTok{\textquotesingle{}\textquotingle{}}\NormalTok{)
22     }\StringTok{\textquotesingle{}\textquotingle{}}\NormalTok{)
23     }\NormalTok{.replace()\StringTok{\textquotesingle{}\textquotingle{}}\NormalTok{)
24     }\StringTok{\textquotesingle{}\textquotingle{}}\NormalTok{)
25     \NormalTok{.cleaned\_text }\OperatorTok{|}\textless{}\textgreater{}\NormalTok{)
26     \StringTok{\textquotesingle{}\textquotingle{}}\textless{}\textgreater{}\NormalTok{)
27     \ControlFlowTok{for}\NormalTok{ c }\KeywordTok{in}\NormalTok{ cleaned:\}
28         \ControlFlowTok{if}\NormalTok{ c.\isalpha():}
29         \NormalTok{cleaned\_text }\OperatorTok{|}\textless{}\textgreater{}\NormalTok{)
30         \NormalTok{c}

```

```
14  
15 \ControlFlowTok{return}\NormalTok{\_cleaned\_\_text}
```