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}\Operator⌋
   Tok{=}\StringTok{\textquotesingle{}r\textquotesingle{}}\NormalTok{,
   encoding}\OperatorTok{=}\StringTok{\textquotesingle{}utf{-}8\textquotesingl⌋
   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{)
   }\OperatorTok{{-}\textgreater{}} \VariableTok{None}\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}
   \OperatorTok{==} \DecValTok{0}\NormalTok{:}
7  \NormalTok{            grouped\_text }\OperatorTok{+=}\NormalTok{ c
   }\OperatorTok{+} \StringTok{"}\CharTok{\textbackslash{}n}\StringTok{"}
8          \ControlFlowTok{elif}\NormalTok{ i }\OperatorTok{\%} \DecValTok{5}
   \OperatorTok{==} \DecValTok{0}\NormalTok{:}
9  \NormalTok{            grouped\_text }\OperatorTok{+=}\NormalTok{ c
   }\OperatorTok{+} \StringTok{" "}
10         \ControlFlowTok{else}\NormalTok{:}
11 \NormalTok{            grouped\_text }\OperatorTok{+=}\NormalTok{ c}
```

```
12
13     \ControlFlowTok{with} \BuiltInTok{open}\NormalTok{(path, mode}\Operator⌋
   Tok{=}\StringTok{\textquotesingle{}w\textquotesingle{}}\NormalTok{,
   encoding}\OperatorTok{=}\StringTok{\textquotesingle{}utf{-}8\textquotesingl⌋
   e{}}\NormalTok{) }\ImportTok{as}\NormalTok{
   f:}
14 \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 :
   }\BuiltInTok{str}\NormalTok{) }\OperatorTok{{-}\textgreater{}}
   \BuiltInTok{str}\NormalTok{:}
2  \NormalTok{    clean }\OperatorTok{=}\NormalTok{ text.upper()
   }\OperatorTok{\textbackslash{}}
3  \NormalTok{
   .replace(}\StringTok{\textquotesingle{}Ä\textquotesingle{}}\NormalTok{,
   }\StringTok{\textquotesingle{}AE\textquotesingle{}}\NormalTok{)
   }\OperatorTok{\textbackslash{}}
4  \NormalTok{
   .replace(}\StringTok{\textquotesingle{}Ö\textquotesingle{}}\NormalTok{,
   }\StringTok{\textquotesingle{}OE\textquotesingle{}}\NormalTok{)
   }\OperatorTok{\textbackslash{}}
5  \NormalTok{
   .replace(}\StringTok{\textquotesingle{}Ü\textquotesingle{}}\NormalTok{,
   }\StringTok{\textquotesingle{}UE\textquotesingle{}}\NormalTok{)
   }\OperatorTok{\textbackslash{}}
6  \NormalTok{
   .replace(}\StringTok{\textquotesingle{}ß\textquotesingle{}}\NormalTok{,
   }\StringTok{\textquotesingle{}SS\textquotesingle{}}\NormalTok{)
   }\OperatorTok{\textbackslash{}}
7  \NormalTok{                .replace(}\StringTok{\textquotesingle{}
   \textquotesingle{}}\NormalTok{,
   }\StringTok{\textquotesingle{}\textquotesingle{}}\NormalTok{)
   }\OperatorTok{\textbackslash{}}
8
9  \NormalTok{    cleaned\_text }\OperatorTok{=}
   \StringTok{\textquotesingle{}\textquotesingle{}}
10
11     \ControlFlowTok{for}\NormalTok{ c }\KeywordTok{in}\NormalTok{ clean:}
12         \ControlFlowTok{if}\NormalTok{ c.isalpha():}
13 \NormalTok{            cleaned\_text }\OperatorTok{+=}\NormalTok{ c}
```

```
14
15      \ControlFlowTok{return}\NormalTok{ cleaned\_text}
```