Exceptions
Handling Runtime Errors
Exception

Runtime Error

An exception is an error that occurs while a program is running.

Usually causes a program to stop.

This may be because of invalid input, wrong data type, or other non-syntax-related issue.
Traceback

Error Message

The error message that appears when an exception is raised is called a “traceback”

(You are probably quite familiar with the red text of a traceback by now)

A traceback indicates where the error occurred, the name of the exception, and a brief description of the error.
Exception Handler

try/except

Up to this point, we have sought to avoid exceptions by carefully coding our programs.

Errors cannot always be avoided but we can write an “exception handler” to prevent the program from crashing.

An exception handler is written with a try/except statement.
Exception Handler

General Format

```python
try:
    statement1
    statement2

except ExceptionName:
    statement1
    statement2
```
Exception Handler Procedure

- If a statement in the try block raises an exception that has been specified by name in the except block, then the except handler executes and the program resumes.

- If a statement in the try block raises an exception that has not been specified by name, the program will stop and give a traceback.

- If the statements in the try block do not raise an exception, the except block is skipped and the program resumes.
Exception Handler
Optional Format

try:
    statement1
    statement2

except ExceptionName1:
    statement1
    statement2

except ExceptionName2:
    statement1
    statement2

except:
    statement1
    statement2
Exception Handler

```python
try:
    statement1
    statement2
except ExceptionName:
    statement1
    statement2
else:
    statement1
    statement2
```
Exception Handler
finally

try:
    statement1
    statement2
except ExceptionName:
    statement1
    statement2
finally:
    statement1
    statement2
Exceptions Not Handled

Exceptions not handled will cause a program to stop

This may happen if:

• There are no except statements specifying the kind of error that occurs and no generic exception handler

• An exception is raised outside of the try section of your program

Therefore, pay attention to where exceptions might be raised and construct programs accordingly
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