Problem Solving Using Python

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FUNDAMENTAL CONCEPTS – unit 1

Literals

Variables and Identifiers

Operators

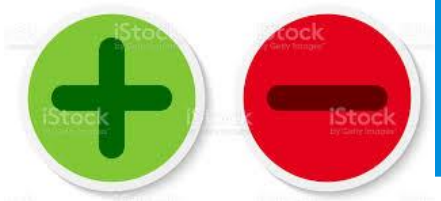
Expressions and Data types

Literals

- A literal is a sequence of one or more characters that stands for itself
- Type
  - **Numeric Literals**
  - **String Literals**

Numeric Literals

- Digits 0–9, **INTEGERS**
- An optional sign character (1 or 2),
- A possible decimal point



Numeric Literals integer values			incorrect	
5	5. 5.(		00.125	
2500	2500.		500	2,500.125
+2500	+2500.		500	+2,500.125
-2500	-2500.		500	-2,500.125

FIGURE 2-2 Numeric Literals in Python

Shell

Clear

```
Hello world

> 1024
1024
> -1024
-1024
> .1024
0.1024
> 1.024
1.024
> 1.024
> 1,024
  File "<stdin>", line 1
    1,024
       ^
SyntaxError: leading zeros in decimal integer literals are not permitted;
    use an 0o prefix for octal integers
> 
```

Limits of Range in Fl
Point Representatio

Arithmetic overflow **occurs when result is too large in magnitude represented.**

Arithmetic underflow **occurs when result is too small in magnitude to be represented**

Limits of Precision in Floating-Point Representation

om the Pythor

```
>> 1/10
?
>> 1/10 +
?
>> 10 * (1
?
```

Shell Clear

```
Hello world

> 1/10
0.1
> 1/10+1/10+1/10
0.30000000000000004
> 10*(1/10)
> 1.0
> 6*(1/10)
0.6000000000000001
> 6*1/10
0.6
>
```

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Shell

Clear

```
Hello world

> format(11/12,'.2f')
> '0.92'
> format(11/12,'.3f')
> '0.917'
> > '9.17e-01'
> format(11/12,'.3e')
'9.167e-01'
>
```

String Literals

- **String literals , or “ strings ,”represent** a sequence of characters,

```
print("Hello world")
print("Let's go!")
print('Let's Go')
print("Let'sGo!')
print('Hello")
print('Hello')
print("Let's Go")
```

The Representation of Character Values

- th
  ...

Shell

```
Hello world

> ord('1')
> 49
> ord('2')
50
> chr(65)
'A'
> chr(90)
```

Ord & chr function

- The ord function gives the UTF-8 (ASCII) encoding of a given character. For example, ord('A') is 65.
- The chr function gives the character for a given encoding value, thus chr(65) is 'A'.

Unicode

- **Unicode is capable of representing over 4 billion different characters, enough to represent the** characters of all languages, past and present.
- Python's (default) character encoding uses **UTF-8,** an eight-bit encoding that is part of the Unicode standard.

Control Characters

- **Control characters are special characters that are not displayed on the screen.**
- They *control* the display of output
- They are represented by a combination of characters called an *escape sequence .*

Escape sequence

main.py

Run

Shell

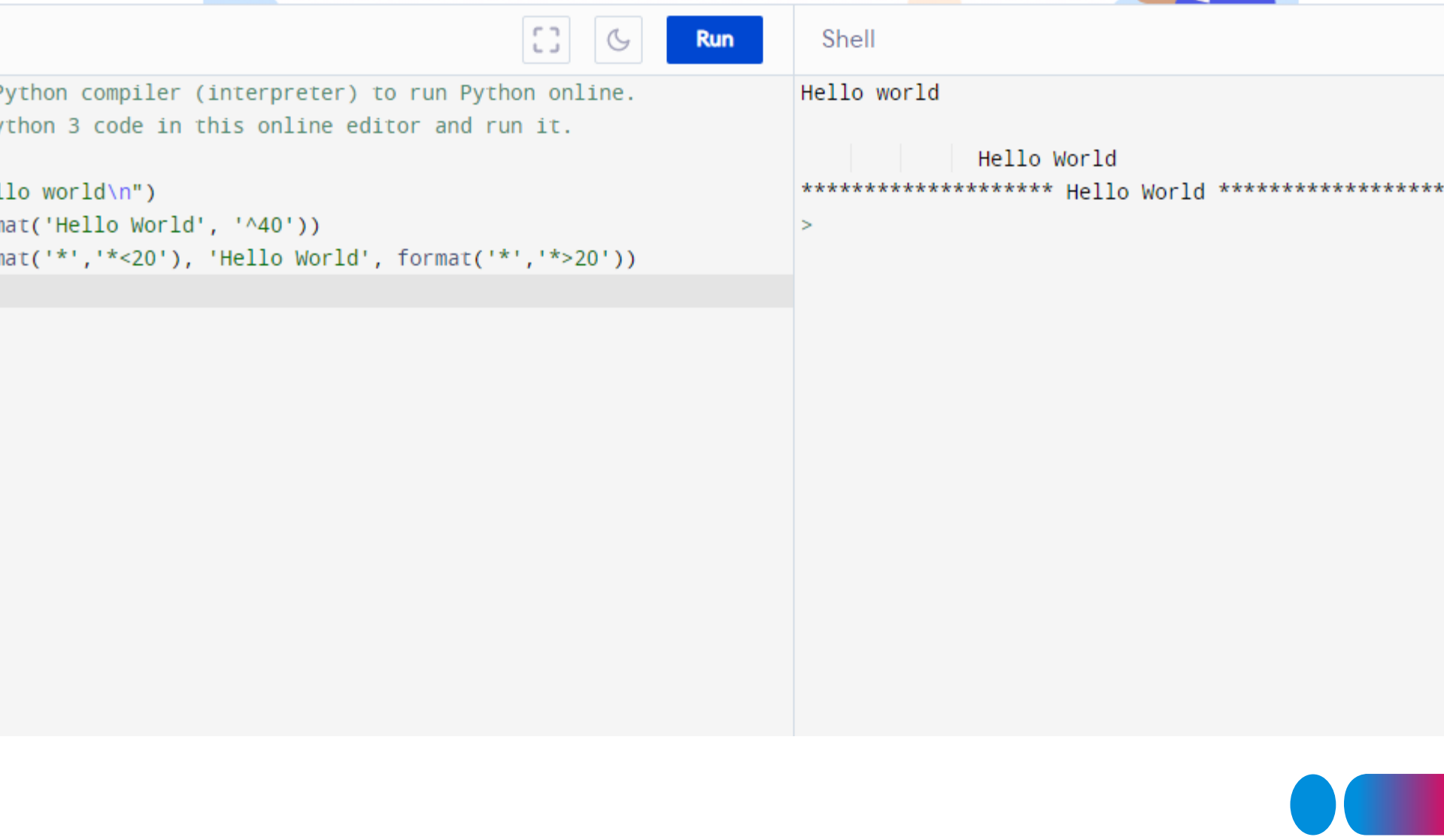
```
1  # Online Python compiler (interpreter) to run Python online.
2  # Write Python 3 code in this online editor and run it.
3
4  print("Hello world\n")
5  print("Let's go!")
6  #print('Let's Go')
7  #print("Let's Go!')
8  #print('Hello")
9  print('\nHello')
10 print("Let's Go")
11
```

```
Hello world

Let's go!

Hello
Let's Go
>
```

String Formatting



Implicit and Explicit Line Joining

- Matching parentheses, square brackets, and curly braces can be used to span a *logical program* line on more than one physical line.
- Program lines may be explicitly joined by use of the backslash(\) character.

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