Python School WB3
Math and String Manipulation

NAME:

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Import Math

The Math Unit enables you to use mathematical functions such as π (pi) and sine, cosine and tangent.

You can use it by including the following line at the top of your program:

```
import math
```

The following functions may be useful:

- `math.pi` - provides an approximation of π
- `math.radians(x)` - converts x from degrees to radians.
- `math.sin(x)` - returns the sine of x radians.
- `math.cos(x)` - returns the cosine of x radians.
- `math.tan(x)` - returns the tangent of x radians.

String Manipulation

There are various functions you can apply to strings that may be helpful (assuming you have a string stored in a variable called `yourString`):

- `yourString.upper()` - returns the string in upper case.
- `yourString.lower()` - returns the string in lower case.
- `yourString.capitalize()` - returns the string with the first letter of the string capitalized
- `yourString.title()` - returns the string with the first letter of each word capitalzed.
- `yourString.replace(x,y)` - returns the string with the characters represented by x replaced by the characters represented by y.
- `yourString[x:y]` - returns the string starting at character x and ending before character y.

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Main Exercises

Write a ‘Travel Money’ program that asks the user for the amount of money they will take on holiday (in GB pound) and convert this into the equivalent amount in Euros, ignoring any Cents that might result from the conversion. The input and output should be user friendly.

Box to stick your code

```
import math
print("Welcome to the money converter! This will convert GBP to Euros.")
print("Please enter the amount of money you would like:£ ")
moneyEntered = float(input())
thing = moneyEntered*0.12
result1 = moneyEntered + thing
result2 = round(result1)
print(" Here is the exact number:€", result1)
print("Here is the rounded amount:€", result2)
```

```
Welcome to the money converter! This will convert GBP to Euros.
Please enter the amount of money you would like:£
7
 Here is the exact number:€ 7.84
Here is the rounded amount:€ 8
>>>
```

Create a program that will allow the user to enter a quote by a famous person. Output this quote in upper case, lower case, capitalise and title formats.

Box to stick your code

```
Please enter a quote by a famous person: I like eating sweets
I LIKE EATING SWEETS i like eating sweets I like eating sweets I Like Eating Sweets
>>>
```

```
yourString = input("Please enter a quote by a famous person: ")
print(yourString.upper(), yourString.lower(), yourString.capitalize(), yourString.title())
```

Extension Exercises

Extension Task 1

Improve the 'Travel Money' program so that it will tell you how many 50,20,10 and 5 Euro notes you would receive for a given value of Pounds.

Box to stick your code

Extension Task 2

Calculate the circumference and area of a circle when the user enters a radius. Round the answers to 2 decimal places. The input and output should be user friendly. TIP: You will need to import the math function.

Box to stick your code

```
import math
print("This program can calculate the circumference and area of a circle")
radius = int(input("Please enter a number that will act as a radius for your circle"))
diameter = radius*2
circumference = diameter*math.pi
print("The cirumference is", round(circumference, 2))
radiusSquared = radius*radius
area = math.pi*radiusSquared
print("The area is", round(area, 2))
```

```
This program can calculate the circumference and area of a circle
Please enter a number that will act as a radius for your circle5
The cirumference is 31.42
The area is 78.54
>>>
```

Examples

Using Math: https://repl.it/Df2Q/3

Using String Functions: https://repl.it/Df24/2