

# CITC-1301 Introduction to Programming

## Chapter 5 Lab 1 – Enhancing Human Age to Dog Age Program

Start by copying and pasting the code below into your editor. Then, modify the "Human Age to Dog Age" program with the following enhancements:

- Create a function called: **main()**. The **main()** function accepts no arguments. Move everything – except the constants – inside the **main()** function. At the bottom of the code, call the **main()** function.
- If the user enters a value less than zero for **humanAge**, use a loop to inform the user that a **humanAge** of zero or greater is required and ask the user to enter **humanAge** again.
- Move the logic used to determine the human age to dog age calculation into a function, called: **getDogAge()**. The **getDogAge()** function accepts one floating-point argument, called: **humanAge**. Based on the passed-in **humanAge**, the **getDogAge()** function calculates and returns the equivalent dog age as a floating-point value (i.e., the function should not return a string). Do not output anything to the screen from the **getDogAge()** function! Output to screen should only occur from the **main()** function.
- Use a loop to allow the user to calculate another dog age if they so choose.

```
# Constants
ONE_YEAR_AGE = 15
TWO_YEARS_AGE = 9
MORE_THAN_TWO_MULTIPLIER = 5

# Output program's purpose
print("This program calculate's a dog's approximate age in \"dog years\" based on human years.\n")

# Get human years from user
humanAge = float(input("Dog's age in human years? "))

if humanAge < 0:
    print("\nHuman age must be a positive number.")
else:
    # Human age to dog age calculation
    if humanAge <= 1:
        dogAge = ONE_YEAR_AGE * humanAge
    elif humanAge <= 2:
        dogAge = ONE_YEAR_AGE + (TWO_YEARS_AGE * (humanAge - 1))
    else:
        dogAge = ONE_YEAR_AGE + TWO_YEARS_AGE + (MORE_THAN_TWO_MULTIPLIER * (humanAge - 2))
    # end if

    print("\nA dog with a human age of", format(humanAge, ",.1f"), "years is",
          format(dogAge, ",.1f"), "in dog years.")
# end if
```

### Example outputs:

```
This program calculates a dog's approximate age in "dog years" based on human years.
```

```
Dog's age in human years? 1.5 [ENTER]
```

```
A dog with a human age of 1.5 years is 19.5 in dog years.
```

```
Would you like to calculate another dog age? (Y/n): Y [ENTER]
```

```
Dog's age in human years? 12.75 [ENTER]
```

```
A dog with a human age of 12.8 years is 77.8 in dog years.
```

```
Would you like to calculate another dog age? (Y/n): N [ENTER]
```

```
This program calculates a dog's approximate age in "dog years" based on human years.
```

```
Dog's age in human years? -1 [ENTER]
```

```
To calculate a dog's age in human years, please enter a value of zero or greater.
```

```
Dog's age in human years? 1.5 [ENTER]
```

```
A dog with a human age of 1.5 years is 19.5 in dog years.
```

```
Would you like to calculate another dog age? (Y/n): N [ENTER]
```

### Test Cases

Case	Human Age	Dog Age	Success?
1	0.5	7.5	<input type="checkbox"/>
2	1	15.0	<input type="checkbox"/>
3	1.5	19.5	<input type="checkbox"/>
4	2	24.0	<input type="checkbox"/>
5	2.5	26.5	<input type="checkbox"/>
6	5	39.0	<input type="checkbox"/>
7	10	64.0	<input type="checkbox"/>
8	15	89.0	<input type="checkbox"/>
9	20	114.0	<input type="checkbox"/>

### Submission Instructions

- Upload your Python script (i.e., your .py file) to the appropriate dropbox on eLearn.