# Homework2

October 7, 2024

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### 1.1 Homework 2

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Assignment submission date: 9/10/2024

Answer the following problems. Add additional cells as needed. Explain your code by adding comments to it and/or cells with markdown text as necessary.

#### 1.1.1 Problem 1

Create a function that takes as input a temperature value in degrees Fahrenheit and converts it to degrees Kelvin. You should research the formula for doing such a conversion. The name you **must** give to the function is *kelvin*. The function must return the temperature value in degrees Kelvin. (40 points)

[2]:
```
# YOUR CODE HERE

# To convert Fahrenheit to Kelvin
def kelvin(temp):
    return str(round(((float(temp) - 32) * 5 / 9) +273.15 , 2)) + ' K'

print(kelvin(32))
```

```
273.15 K
```

#### 1.1.2 Problem 2

Using the grading table provided in the course syllabus, create a function that takes a 0 to 100 score value and returns the corresponding letter grade. The name you must give to the function is *lettergrade*. (40 points)

[3]:
```
# YOUR CODE HERE

# To convert score to grade
def lettergrade(score):
    score = round(float(score), 2)
    # Score is btw 93 - 100 then its A
```

```
    if score >= 93 and score <= 100:
        return 'A'
    # Score is btw 90 - 92.99 then its A-
    elif score >= 90 and score <= 92.99:
        return 'A-'
    # Score is btw 87 - 89.99 then its B+
    elif score >= 87 and score <= 89.99:
        return 'B+'
    # Score is btw 83 - 86.99 then its B
    elif score >= 83 and score <= 86.99:
        return 'B'
    # Score is btw 80 - 82.99 then its B-
    elif score >= 80 and score <= 82.99:
        return 'B-'
    # Score is btw 77 - 79.99 then its C+
    elif score >= 77 and score <= 79.99:
        return 'C+'
    # Score is btw 73 - 76.99 then its C
    elif score >= 73 and score <= 76.99:
        return 'C'
    # Score is btw 70 - 72.99 then its C-
    elif score >= 70 and score <= 72.99:
        return 'C-'
    # Score is btw 0 - 69.99 then its F
    elif score >= 0 and score <= 69.99:
        return 'F'
    # Score is not btw 0-100 then its invalid
    else:
        return 'Invalid Score'

print(lettergrade(76.98))
print(lettergrade(94.32))
print(lettergrade(22.2))
print(lettergrade(120))
```

```
C
A
F
Invalid Score
```

### 1.1.3 Problem 3

Create a piece of code that uses a flow control statement (if, for, while) that was not used in the previous problems of this assignment. (20 points)

[4]:
```
# YOUR CODE HERE
import random
# Initialize shopping list and budget
```

```
shopping_list = ["apples", "bread", "milk", "eggs", "cheese"]
budget = 50.0
cart = {}

print("Welcome to the Grocery Store!")
print(f"Your shopping list: {shopping_list}")
print(f"Your budget: ${budget:.2f}")

# Main shopping loop - while
while shopping_list and budget > 0:
    print("\nCurrent list:", shopping_list)
    print(f"Remaining budget: ${budget:.2f}")

    item = shopping_list[0]
    price = round(random.uniform(1, 10), 2)  # Random price between 1 and 10

    # Using if-else conditions to check if you want to buy the product or not
    if budget >= price:
        print(f"\n{item.capitalize()} costs ${price:.2f}")
        buy = input(f"Do you want to buy {item}? (yes/no): ").lower()

        if buy == 'yes':
            budget -= price
            cart[item] = price
            shopping_list.remove(item)
            print(f"Added {item} to your cart.")
        else:
            print(f"Skipped {item}.")
            shopping_list.remove(item)
    else:
        print(f"\nSorry, you don't have enough money to buy {item}.")
        shopping_list.remove(item)

# Print shopping results
print("\nShopping completed!")
if cart:
    print("Items in your cart:")
    # Using for loop to print all items in cart
    for item, price in cart.items():
        print(f"- {item.capitalize()}: ${price:.2f}")
    print(f"Total spent: ${sum(cart.values()):.2f}")
else:
    print("Your cart is empty.")

print(f"Remaining budget: ${budget:.2f}")

if shopping_list:
```

```
    print("Items you couldn't buy:", ", ".join(shopping_list))
else:
    print("You bought everything on your list!")
```

```
Welcome to the Grocery Store!
Your shopping list: ['apples', 'bread', 'milk', 'eggs', 'cheese']
Your budget: $50.00

Current list: ['apples', 'bread', 'milk', 'eggs', 'cheese']
Remaining budget: $50.00

Apples costs $4.88

Do you want to buy apples? (yes/no):  yes

Added apples to your cart.

Current list: ['bread', 'milk', 'eggs', 'cheese']
Remaining budget: $45.12

Bread costs $4.08

Do you want to buy bread? (yes/no):  yes

Added bread to your cart.

Current list: ['milk', 'eggs', 'cheese']
Remaining budget: $41.04

Milk costs $8.79

Do you want to buy milk? (yes/no):  no

Skipped milk.

Current list: ['eggs', 'cheese']
Remaining budget: $41.04

Eggs costs $7.68

Do you want to buy eggs? (yes/no):  yes

Added eggs to your cart.

Current list: ['cheese']
Remaining budget: $33.36

Cheese costs $5.80

Do you want to buy cheese? (yes/no):  no

Skipped cheese.
```

```
Shopping completed!
Items in your cart:
- Apples: $4.88
- Bread: $4.08
- Eggs: $7.68
Total spent: $16.64
Remaining budget: $33.36
You bought everything on your list!
```