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TW23

Activity 4B: Set and Dictionary

1. Set Operations

Source Code:

```
CortanAct4.py U  CortanAct4B.py U x  {} students.json U
ACT4 > CortanAct4B.py > ...
1  A = {'a', 'b', 'c', 'd', 'f', 'g'}
2  B = {'b', 'c', 'h', 'l', 'm', 'o'}
3  C = {'c', 'd', 'f', 'h', 'i', 'j', 'k'}
4
5  A_and_B = A & B
6  print("a. Elements in A and B:", A_and_B, "Count:", len(A_and_B))
7
8  B_not_A_C = B - (A | C)
9  print("b. Elements in B that are not part of A and C:", B_not_A_C, "Count:", len(B_not_A_C))
10
11 h_i_j_k = C - (A | B)
12 print("i. {h, i, j, k}:", h_i_j_k)
13
14 c_d_f = C & A
15 print("ii. {c, d, f}:", c_d_f)
16
17 b_c_h = B & C
18 print("iii. {b, c, h}:", b_c_h)
19 |
20 d_f = A & C - B
21 print("iv. {d, f}:", d_f)
22
23 c_only = C - (A | B)
24 print("v. {c}:", c_only)
25
26 l_m_o = B - (A | C)
27 print("vi. {l, m, o}:", l_m_o)
28
```

Results:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS
PS C:\Users\John John\OneDrive\Documents\GitHub\it0011_Cortan> python -u "c:\Users\John John\OneDrive\Documents\GitHub\it0011_Cortan\ACT4\CortanAct4B.py"
a. Elements in A and B: {'c', 'b'} Count: 2
b. Elements in B that are not part of A and C: {'m', 'l', 'o'} Count: 3
i. {h, i, j, k}: {'i', 'j', 'k'}
ii. {c, d, f}: {'d', 'c', 'f'}
iii. {b, c, h}: {'c', 'h'}
iv. {d, f}: {'d', 'f'}
v. {c}: {'i', 'j', 'k'}
vi. {l, m, o}: {'m', 'l', 'o'}
PS C:\Users\John John\OneDrive\Documents\GitHub\it0011_Cortan>
```

2. Currency Converter

Source Code:

```
CortanAct4.py U CortanAct4B.py U CortanAct4B2.py U X {} students.json U
ACT4 > CortanAct4B2.py > load_currency_rates
1 import csv
2 import os
3
4 def load_currency_rates(filename):
5     rates = {}
6
7     if not os.path.exists(filename):
8         print(f"Error: The file '{filename}' was not found.")
9         return rates
10
11     try:
12         with open(filename, mode='r', newline='', encoding='utf-8-sig') as file:
13             reader = csv.reader(file)
14             next(reader)
15             for row in reader:
16                 if len(row) >= 2:
17                     currency, rate = row[0].strip(), row[2].strip()
18                     try:
19                         rates[currency] = float(rate)
20                     except ValueError:
21                         print(f"Skipping invalid rate for {currency}: {rate}")
22     except Exception as e:
23         print(f"Error reading file: {e}")
24
25     return rates
26
27 def convert_currency(amount, currency, rates):
28     return amount * rates.get(currency, 0)
29
30 def main():
31     filename = r"C:\Users\John John\OneDrive\Documents\GitHub\Currency\currency.csv"
32
33     rates = load_currency_rates(filename)
34
35     if not rates:
36         print("No exchange rates available. Exiting program.")
37         return
38
39     try:
40         dollar_amount = float(input("How much dollar do you have? "))
```

```

40         currency = input("What currency you want to have? ").strip().upper()
41
42         converted_amount = convert_currency(dollar_amount, currency, rates)
43
44         if converted_amount > 0:
45             print(f"\nDollar: {dollar_amount} USD")
46             print(f"{currency}: {converted_amount:.2f}")
47             print("Currency not found in the list.")
48     except ValueError:
49         print("Invalid input. Please enter a valid number.")
50
51 if __name__ == "__main__":
52     main()
53

```

Results:

```

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  COMMENTS
PS C:\Users\John John\OneDrive\Documents\GitHub\it0011_Cortan> python -u "c:\Users\John John\OneDrive\Documents\GitHub\it0011_Cortan\ACT4\CortanAct4B2.py"
Error reading file: 'utf-8' codec can't decode byte 0xf3 in position 693: invalid continuation byte
No exchange rates available. Exiting program.
PS C:\Users\John John\OneDrive\Documents\GitHub\it0011_Cortan>

```