

111) Coin change problem

CODE:

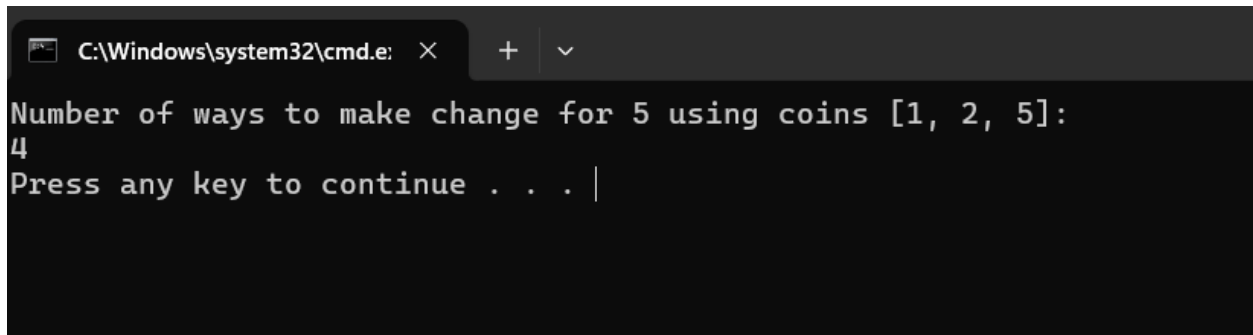
```
def coin_change(coins, amount):
    dp = [0] * (amount + 1)
    dp[0] = 1

    for coin in coins:
        for j in range(coin, amount + 1):
            dp[j] += dp[j - coin]

    return dp[amount]

if __name__ == "__main__":
    coins = [1, 2, 5]
    amount = 5
    print(f"Number of ways to make change for {amount} using coins {coins}:")
    print(coin_change(coins, amount))
```

OUTPUT:

A screenshot of a Windows command prompt window. The title bar shows the path 'C:\Windows\system32\cmd.e' with standard window controls. The command prompt displays the output of the program: 'Number of ways to make change for 5 using coins [1, 2, 5]:' followed by the number '4' on the next line. The prompt then shows 'Press any key to continue . . . |' with a vertical cursor.

TIME COMPLEXITY :  $O(V \cdot E)$