

Assignment One - Programming

Name	
Student number	

Direction:

Please answer all the questions below and hand in your answers before the due day. All work, must be handed in on time.

Due Date:

April 7, 2022. Please hand it in by the class time.

Problem:

You are given an integer array coins representing coins of different denominations and an integer amount representing a total amount of money.

Return the fewest number of coins that you need to make up that amount, including the amount 0 which can be made up of 0 coin. If that amount of money cannot be made up by any combination of the coins, return -1.

You may assume that you have an infinite number of each kind of coin.

Test Cases:

Case 1:

```
Input: coins = [1,2,5], amount = 11  
Output: 3  
Explanation: 11 = 5 + 5 + 1
```

Case 2:

```
Input: coins = [2], amount = 3  
Output: -1
```

Case 3:

```
Input: coins = [1], amount = 0  
Output: 0
```

Key Points:

- You can choose **one** of these programming languages to implement above algorithm (C/C++/Python/Java/Go/JavaScript/Rust).
- Your program should run successfully, output the correct answer for every test case and provide **screenshots of the output results**.
- **Dynamic programming** is recommended, and you can also use **DFS** or others as low complexity of time and space consuming as possible.
- Please make sure there are necessary comments in your source code. Plagiarism is strictly forbidden.

Submission:

- Source codes without project files.
- A brief documentation (PDF is recommended), including algorithm idea, algorithm complexity analysis, and screenshots of running results.
- Pack all above files and compress it into a **ZIP** file. Please rename the ZIP file as 'StudentID_Name_Assignment_1.zip'.
- Send the zip file to the email.
 - **1012376712@qq.com**
- Please send the email by **Apr.7th, 2022**.