

Problem 9. Who Has the Most Change?

You have a matrix for which each row is a person and the columns represent the number of quarters, nickels, dimes, and pennies that person has (in that order). What is the row index of the person with the most money?

Note for those unfamiliar with American coins: quarter = \$0.25, dime = \$0.10, nickel = \$0.05, penny = \$0.01.

Example:

```
% Input  a = [1 0 0 0; 0 1 0 0]
% Output b = 1
```

since the first person will have \$0.25 and the second person will have only \$0.05.

Scratch Pad

```
a = [1 0 0 0; 0 1 0 0]
```

```
a = 2x4
    1    0    0    0
    0    1    0    0
```

```
most_change(a)
```

```
ans = 1
```

```
a = [
    2 4 1 3; % Person 1
    3 2 2 2; % Person 2
    1 1 5 0; % Person 3
];
```

```
most_change(a)
```

```
ans = 2
```

Solution

```
function b = most_change(a)
    % Define the values of each coin
    quarterValue = 0.25;
    dimeValue = 0.10;
    nickelValue = 0.05;
    pennyValue = 0.01;

    % Calculate the total money for each person
    totalMoney = a(:, 1) * quarterValue + ...
                 a(:, 2) * nickelValue + ...
                 a(:, 3) * dimeValue + ...
```

```
        a(:, 4) * pennyValue;  
  
    % Find the row index of the person with the most money  
    [~, b] = max(totalMoney);  
end
```