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Exercise 1

```
carry ⟵ 0
i ⟵ 0

REPEAT UNTIL (i > m − 1)
{
    c_i ⟵ a_i + b_i + carry

    IF (c_i ≥ 10)
    {
        c_i ⟵ (c_i − 10)
        carry ⟵ 1
    }
    ELSE
    {
        carry ⟵ 0
    }

    i ⟵ (i + 1)
}

c_m ⟵ carry

DISPLAY (c_m c_{m−1} c_{m−2} ... c_0)
```

For each value of i, trace the algorithm and fill in the table below using the sample inputs. There are two columns for ci, carry, and i. The first column is where you put their respective values before the IF statement. The second column is where you put their respective values after the IF statement. In the last row, put the final value of carry (i.e., right before the DISPLAY statement).

```
a ⟵ 923
b ⟵ 567
m ⟵ 3
```

i	***a_i***	***b_i***	***carry***	***c_i***	***c_i***	***carry***	***i***
0	3	7	0	10	0	1	1
1	2	6	1	9	9	0	2
2	9	5	0	14	4	0	3
3	*N/A*	*N/A*	*1*	*N/A*	*N/A*	*N/A*	*N/A*

Exercise 2

```python
def calc_weekly_earnigs():
    hourly_rate = float(input('Hourly rate\n\n>>> '))

    total_hours = 0
    holiday_hours = 0
    for i in range(7):
        hours_worked = float(input('How many hours worked?\n\n>>> '))
        holiday = int(input('0: if day was not a holiday\n 1: if day was a holiday\n\n>>> '))

        if holiday == 0:
            total_hours += hours_worked

        else:
            holiday_hours += hours_worked

    overtime = total_hours - 40
    return (hourly_rate*total_hours-overtime)+(hourly_rate*1.5*overtime)+(hourly_rate*2*holiday_hours)

print(calc_weekly_earnigs())
```

Exercise 3

```python
TEST_W = 0.40
PROJECT_W = 0.30
QUIZZES_W = 0.20
HOMEWORK_W = 0.10

def calc_grade(values):
    final_grade = 0
    for grade in values:
        final_grade += grade[0]*grade[1]

    print(final_grade)

values = []
def collect_grades():
    a_type = int(input("1: Tests\n2: Projects\n3: Quizzes\n4: Homework\n\n>>> "))
    amount = int(input('How many of those assignments do you have?\n\n>>> '))

    for i in range(amount):
        grade = float(input("What is the grade?\n\n>>> "))

        if a_type == 1:
            values.append([grade, TEST_W])

        elif a_type == 2:
            values.append([grade, PROJECT_W])

        elif a_type == 3:
            values.append([grade, QUIZZES_W])

        else:
            values.append([grade, HOMEWORK_W])

    more = int(input('More assignments?\n0: No\n1: Yes\n\n>>> '))
    if more == 1:
        collect_grades()

collect_grades()
calc_grade(values)
```

Exercise 4

```
1   item_price = float(input("What is the price of the item?\n\n>>> "))
2   amount = float(input("How many are being bought?\n\n>>> "))
3
4   def calc_price(item_price, amount):
5       if amount >= 100:
6           return amount*(item_price*0.88)*1.07
7
8       else:
9           return amount*item_price*1.07
10
11  print(calc_price(item_price, amount))
```

Exercise 5

```python
BILLS = [20, 10, 5, 1, 0.25, 0.10, 0.05, 0.01]
COIN_N = {'0.25': 'quarter', '0.1': 'dime', '0.05': 'nickel'}

def calc_change(total):
    item_count = int(input("How many items did you buy?\n\n>>> "))
    items = []
    for i in range(item_count):
        items.append(float(input("What is the cost of a item?\n\n>>> ")))

    for cost in items:
        total = round(total - cost, 2)

    change = []
    for bill in BILLS:
        if bill <= total:
            ns_bills = total//bill
            change.append([int(ns_bills), bill])
            total = round(total - (ns_bills*bill), 2)

        if total == 0:
            return change

def form_output(change):
    output = ''
    for bills in change:
        if bills[1] >= 1:
            output += f"{bills[0]} ${bills[1]} bill{'s' if bills[0] > 1 else ''}.\n"

        else:
            if bills[1] == 0.01:
                output += f"{bills[0]} {'pennies' if bills[0] > 1 else 'penny'}.\n"

            else:
                output += f"{bills[0]} {COIN_N[str(bills[1])]}{'s' if bills[0] > 1 else ''}.\n"

    return output

print(form_output(calc_change(20)))
```