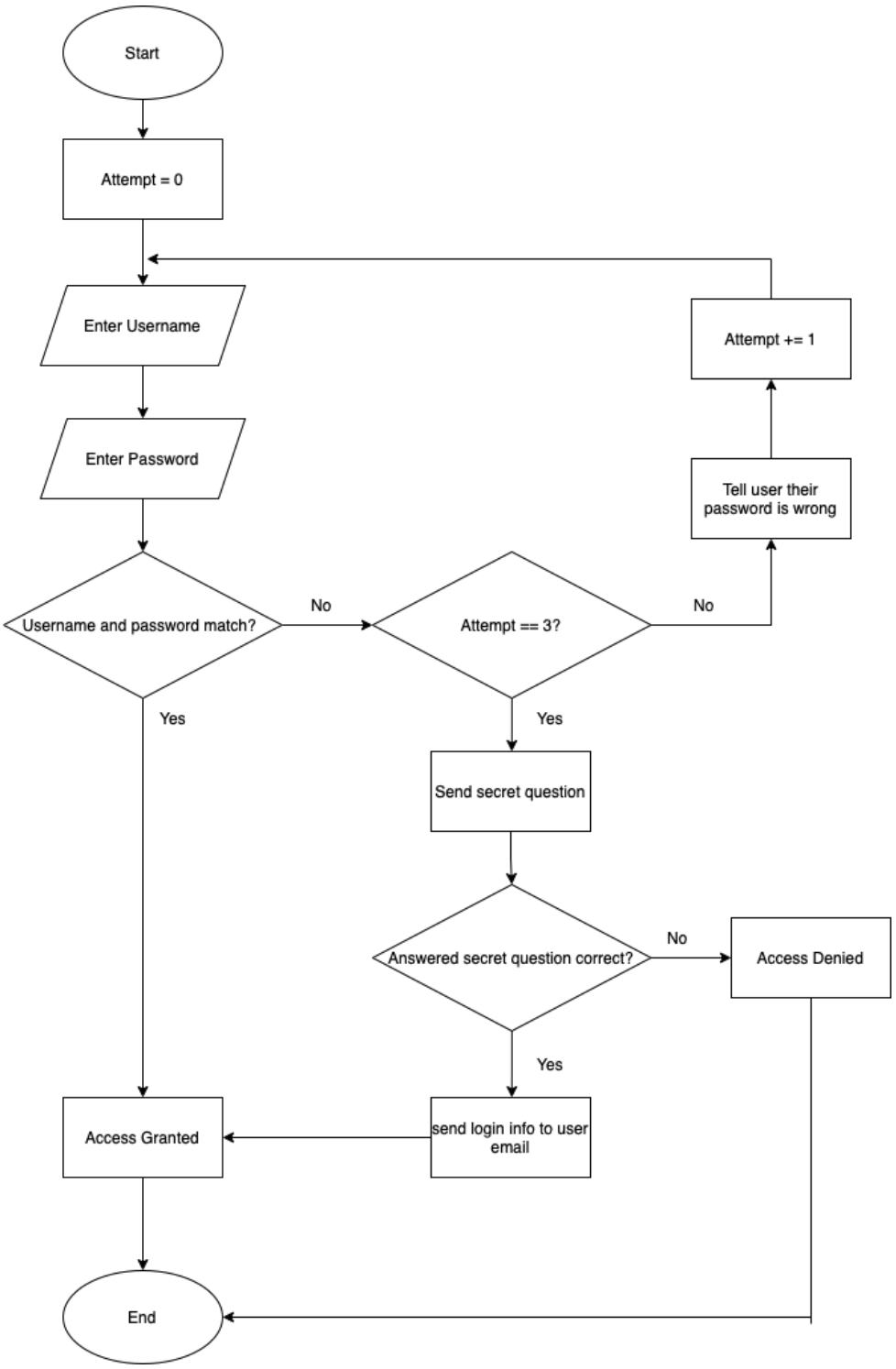
Siraphop Mukdaphetcharat 64011614
Chalita Thongborisut 64011727

1. Login Attempt

a. Flowchart



b. Pseudocode

```
1 attempt ← 0
2 WHILE attempt != 3
3       INPUT(username)
4       INPUT(password)
5       IF password == “Hello” AND username == “Hi”
6               OUTPUT(“Access granted”)
7               ELSE
8                       OUTPUT(“Wrong username or password”)
9                       attempt ← attempt + 1
10      ENDIF
11 END WHILE
12 OUTPUT(“What’s my name?”)
13 IF answer == “Jeff”
14      OUTPUT(“Access granted”)
15      OUTPUT(“Sending your login information to your email”)
16      ELSE
17              OUTPUT(“Access denied”)
18 END IF
```

c. Test Cases

Test Case	Inputs	Expected Results	Coverage
Correctly enter the login info 1st attempt	Username = Hi Password = Hello	Access granted	1, 2, 3, 4, 5, 6, 10, 11
Wrong login info first attempt and correct login info the second attempt	1st attempt Username = 1 Password = 2 2nd attempt Username = Hi Password = Hello	1st attempt Wrong username or password 2nd attempt Access granted	1, 2, 3, 4, 5, 7, 8, 9, 10, 3, 4, 5, 6, 10, 11

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Wrong login info first attempt and second attempt and correct login info 3rd attempt	1st attempt Username = 1 Password = 2 2nd attempt Username = 3 Password = 4 3rd attempt Username = Hi Password = Hello	1st attempt Wrong username or password 2nd attempt Wrong username or password 3rd attempt Access granted	1, 2, 3, 4, 5, 7, 8, 9, 10, 3, 4, 5, 7, 8, 9, 10, 3, 4, 5, 6, 10, 11
Wrong login info first, second and third attempt and answer the security question correctly	1st attempt Username = 1 Password = 2 2nd attempt Username = 3 Password = 4 3rd attempt Username = 5 Password = 6 Answer = Jeff	1st attempt Wrong username or password 2nd attempt Wrong username or password 3rd attempt Access granted Sending your login information to your email	1, 2, 3, 4, 5, 7, 8, 9, 10, 3, 4, 5, 7, 8, 9, 10, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14,15, 18
Wrong login info first, second and third attempt and answer the security question wrongly	1st attempt Username = 1 Password = 2 2nd attempt Username = 3 Password = 4 3rd attempt Username = 5 Password = 6 Answer = Jeffery	1st attempt Wrong username or password 2nd attempt Wrong username or password 3rd attempt Access denied	1, 2, 3, 4, 5, 7, 8, 9, 10, 3, 4, 5, 7, 8, 9, 10, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18

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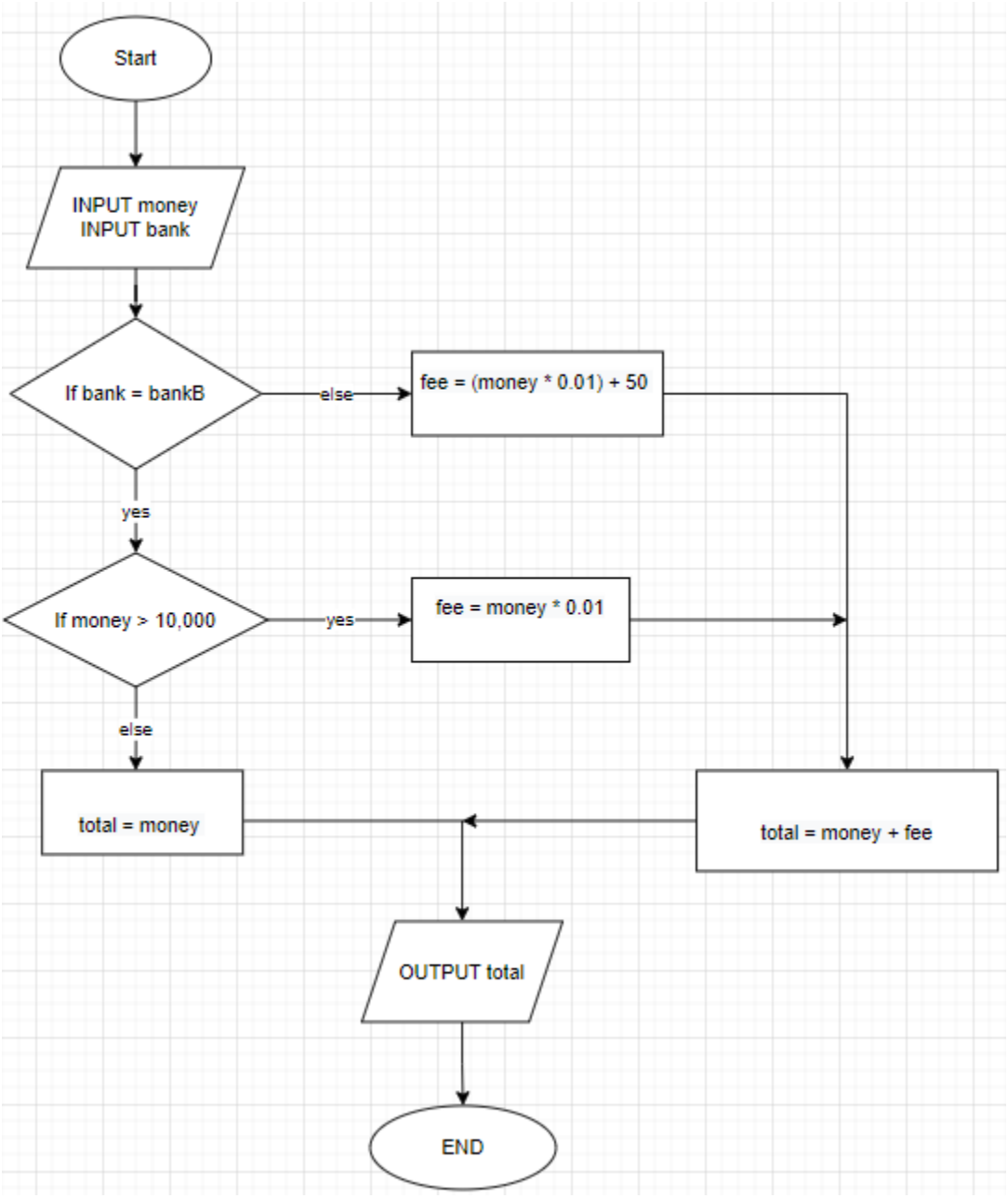
2. Money Transfer

a. Flowchart



b. Pseudocode

```
1 INPUT (money)
2 INPUT (bank)
3 IF bank == bankB
4         IF money > 10,000 THB
```

```
5               fee ← money * 0.01
6               total ← money + fee
7               OUTPUT( total )
8       ELSE
9               total ← money
10              OUTPUT( total )
11      END IF
12 ELSE
13      fee ← (money * 0.01) + 50
14      total ← money + fee
15      OUTPUT( total )
16 END IF
```

c. Test Cases

Test Case	Input	Expected Results	Coverage
Transfer money from the same bank and money is more than 10,000	Bank = bankB Money = 12,000	Total = 12,120	1,2,3,4,5,6,7,11,16
Transfer money from the same bank and money is less than 10,000	Bank = bankB Money = 9,000	Total = 9,000	1,2,3,4,8,9,10,11,16
Transfer money from different bank and money is less than 10,000	Bank != bankB Money = 9,000	Total = 9,140	1,2,3,4,12,13,14,15,16
Transfer money from different bank and money is more than 10,000	Bank != bankB Money = 11,000	Total = 11,160	1,2,3,4,12,13,14,15,16
The bank input is empty and money is less than 10,000	Bank = - Money = 9,000	Total = 9,140	1,2,3,4,12,13,14,15,16
The bank input is empty and money is more than 10,000	Bank != - Money = 11,000	Total = 11,160	1,2,3,4,12,13,14,15,16
Transfer money from the same bank and money input is blank	Bank = bankB Money = -	Error	1

Transfer money from the different bank and money input is blank	Bank != bankB Money = -	Error	1

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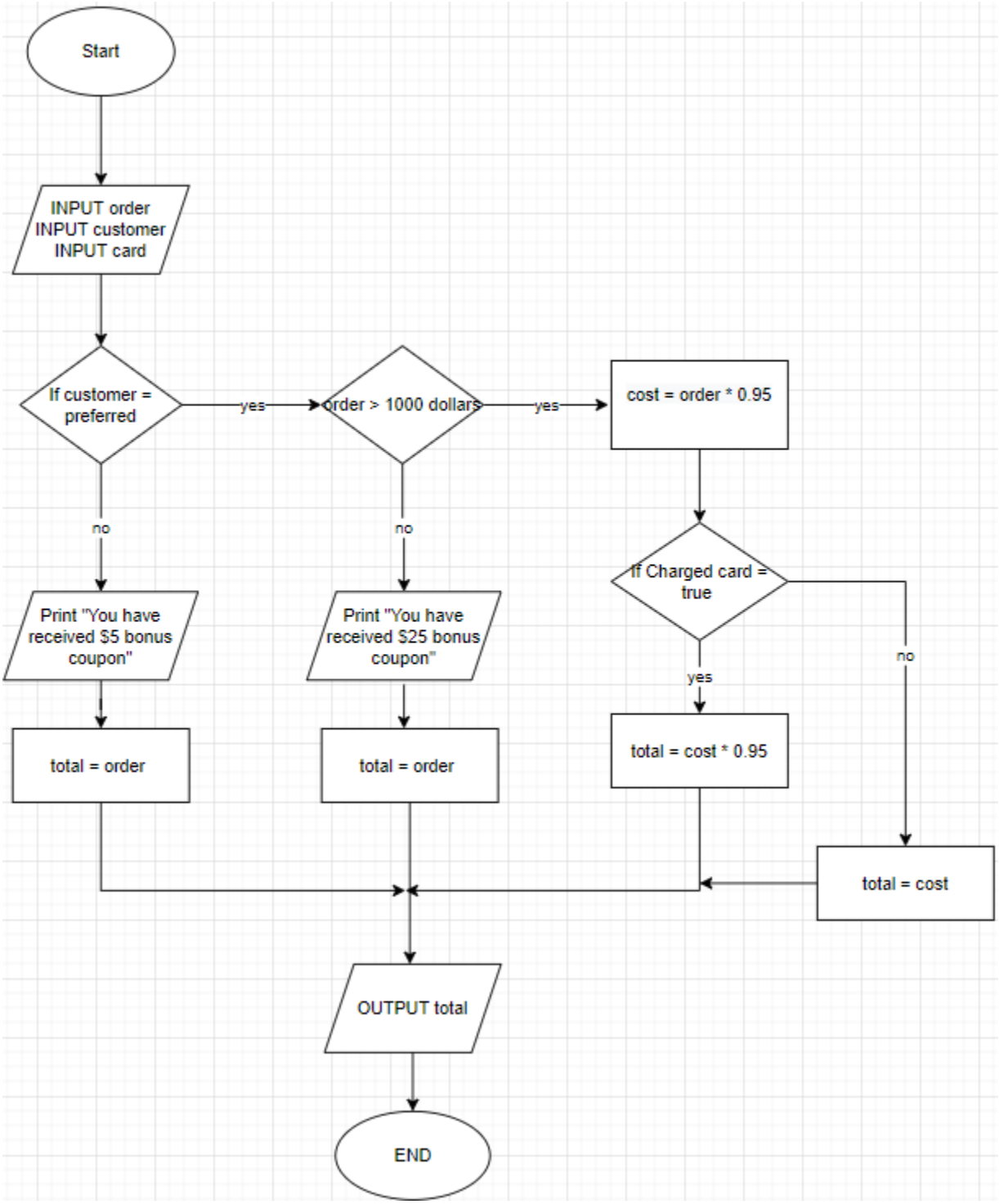
3. Sales Promotion

a. Flowchart



b. Pseudocode

```
1 INPUT (order)
2 INPUT (customer)
3 INPUT (card)
4 IF customer == preferred
5       IF order > 1000
6               cost ← order * 0.95
7               IF card == true
8                       total ← cost * 0.95
9               ELSE
10                      total ← cost
11              ENDIF
12      ELSE
13              OUTPUT(“You have $25 bonus coupon”)
14              total ← order
15      ENDIF
16 ELSE
17      OUTPUT (“You have received $5 bonus coupon”)
18      total ←  order
19 ENDIF
20 OUTPUT (total)
```

c. Test Cases

Test Case	Input	Expected Results	Coverage
Customer is preferred, order is more than 1000, and card is true	Customer = preferred Order = 1100 Card = true	Total = 992.75	1,2,3,4,5,6,7,8,11,15, 19,20
Customer is preferred, order is more than 1000, and card is false	Customer = preferred Order = 1100 Card = false	Total = 1045	1,2,3,4,5,6,7,9,10,11, 15,19,20
Customer is preferred, order is less than 1000 and card is true	Customer = preferred Order = 900 Card = true	“You have received $25 bonus coupon” Total = 900	1,2,3,4,5,12,13,14,15, 16,19,20
Customer is preferred, order is less than 1000 and card is false	Customer = preferred Order = 900 Card = false	“You have received $25 bonus coupon” Total = 900	1,2,3,4,5,12,13,14,15, 16,19,20

Customer is not preferred, order is more than 1000, card is true	Customer != preferred Order = 1100 Card = true	“You have received $5 bonus coupon” Total = 1100	1,2,3,4,16,17,18,19,20
Customer is not preferred, order is more than 1000, card is false	Customer != preferred Order = 1200 Card = false	“You have received $5 bonus coupon” Total = 1200	1,2,3,4,16,17,18,19,20
Customer is not preferred, order is less than 1000, card is true	Customer != preferred Order = 800 Card = true	“You have received $5 bonus coupon” Total = 800	1,2,3,4,16,17,18,19,20
Customer is not preferred, order is less than 1000, card is false	Customer != preferred Order = 850 Card = false	“You have received $5 bonus coupon” Total = 850	1,2,3,4,16,17,18,19,20

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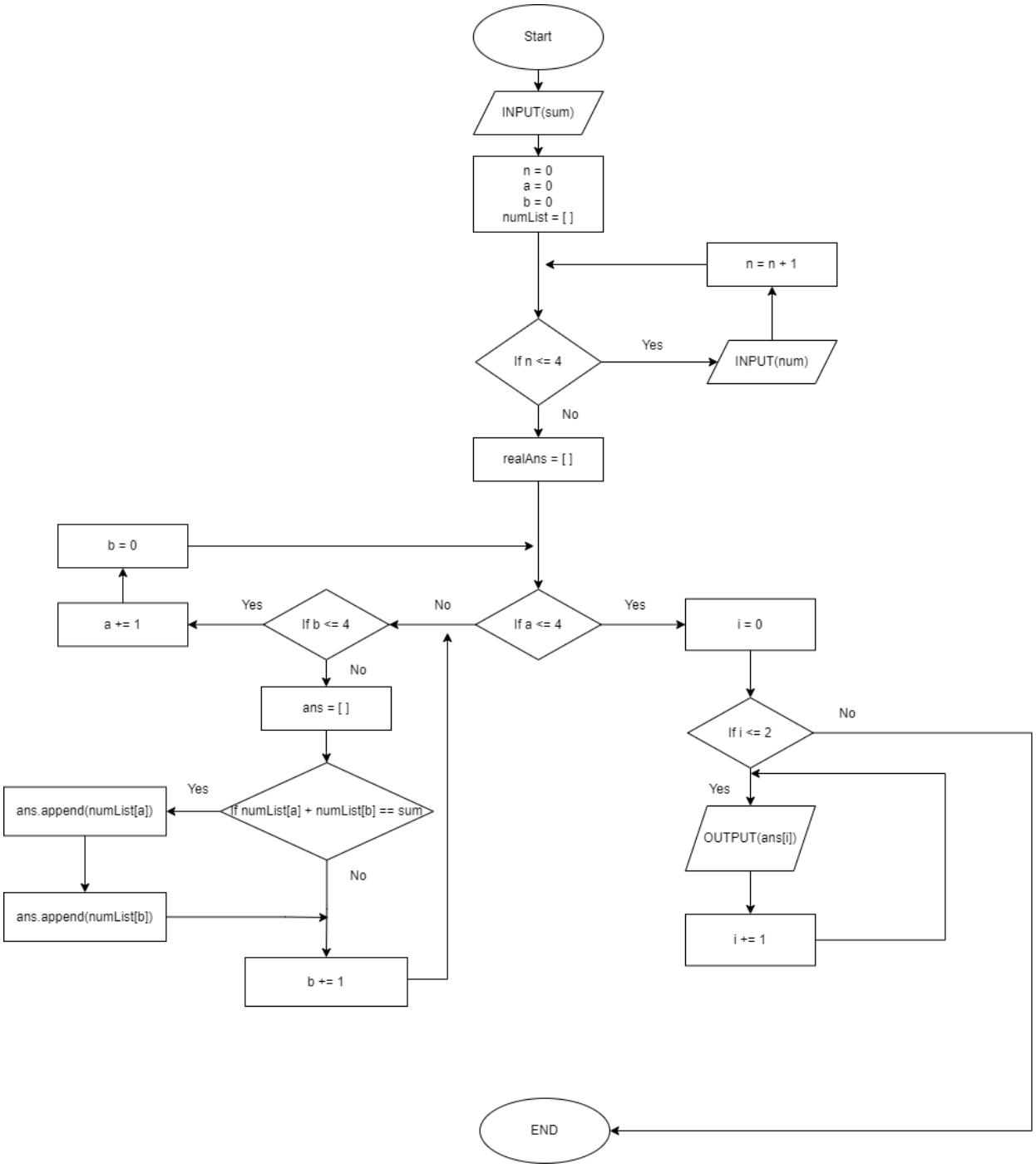
4. Pairs number sum

a. Flowchart



Siraphop Mukdaphetcharat 64011614
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b. Pseudocode

```
1   INPUT( sum )
2   n ← 0
3   a ← 0
4   b ← 0
5   numList ← [ ]
6   WHILE n <= 4
7       INPUT( num )
8       n = n + 1
9   END WHILE
10  realAns ← [ ]
11  WHILE a <= 4
12      WHILE b <= 4
13          ans ← [ ]
14          IF numList[a] + numList[b] == sum
15              ans.append(numList[a])
16              ans.append(numList[b])
17              realAns.append(ans)
18          END IF
19          b += 1
20      END WHILE
21      a += 1
22      b ← 0
23  END WHILE
24  FOR i IN RANGE(ROUND(len(realAns) / 2))
25      OUTPUT(realAns[i])
```

c. Test Cases

Test Case	Input	Expected Results	Coverage
When the input is 1, 2, 3, 4, 5 and the total sum is 6	sum = 6 list = [1, 2, 3, 4, 5]	[1, 5] [2, 4]	1, 2, 3, 4, 5, 6, 7, 8, 6, 7, 8, 6, 7, 8, 6, 7, 8, 6, 7, 8, 9, 10, 11, 12, 13, 19, 12, 13, 14, 15, 16, 17, 18, 19, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 24, 25
When the input is 1, 2, 3, 4, 5 and the total sum is 5	sum = 5 list = [1, 2, 3, 4, 5]	[1, 4] [2, 3]	1, 2, 3, 4, 5, 6, 7, 8, 6, 7, 8, 6, 7, 8, 6, 7, 8, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 24, 25

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When the input is only 1 and sum = 5	sum = 5 list = [1, 1, 1, 1, 1]	NO OUTPUT	1, 2, 3, 4, 5, 6, 7, 8, 6, 7, 8, 6, 7, 8, 6, 7, 8, 6, 7, 8, 9, 10, 11, 12, 13, 19, 20, 21, 22, 23, 24, 25, 24, 25
When sum is 0 and list is 1, 2, 3, 4, 5	sum = 0 list = [1, 2, 3, 4, 5]	NO OUTPUT	1, 2, 3, 4, 5, 6, 7, 8, 6, 7, 8, 6, 7, 8, 6, 7, 8, 6, 7, 8, 9, 10, 11, 12, 13, 19, 20, 21, 22, 23, 24, 25, 24, 25

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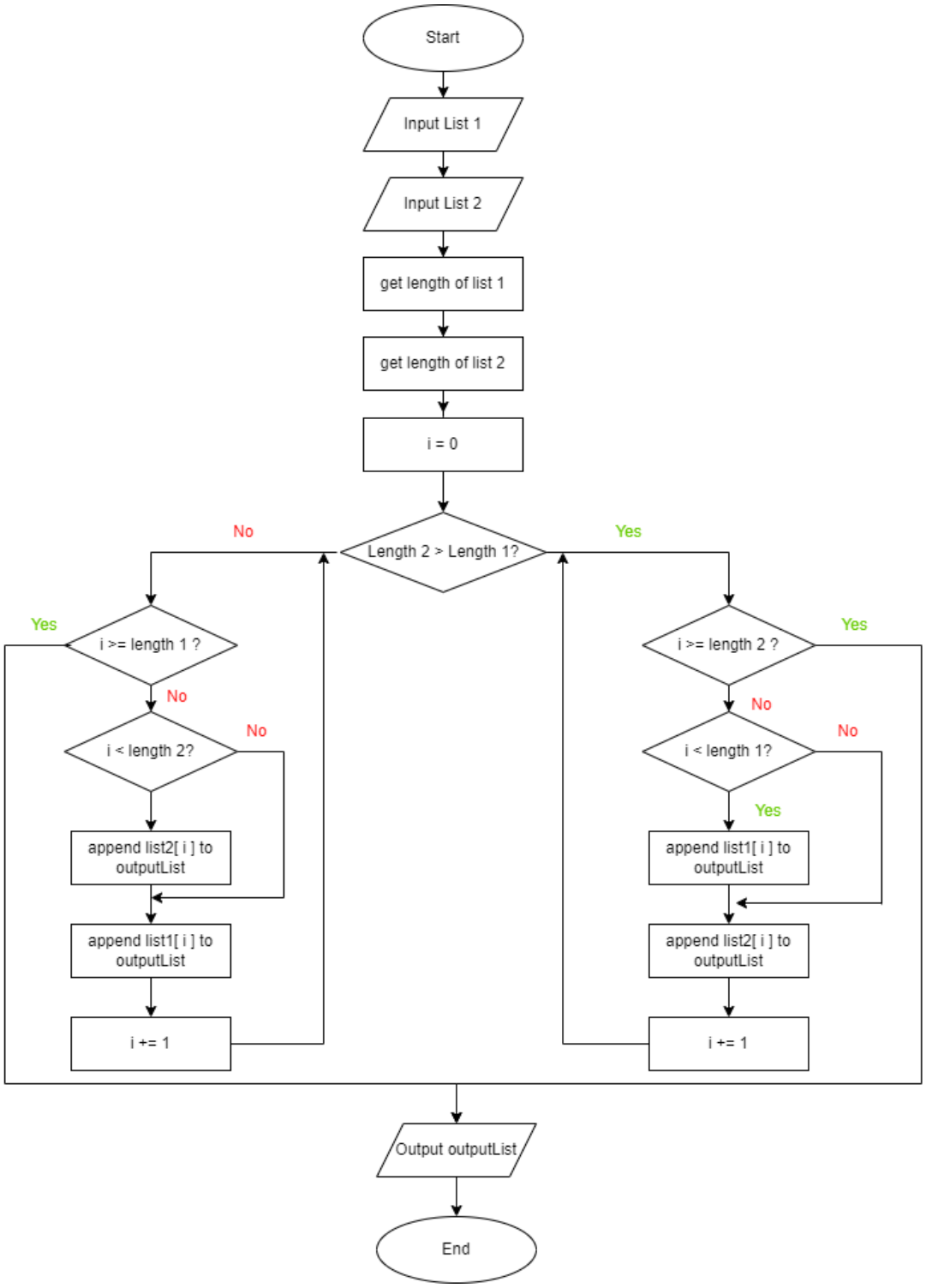
5. Combine two list alternatingly

a. Flowchart



b. Pseudocode

```
1   INPUT(List1)
2   INPUT(List2)
3   ans ← [ ]
4   len1 ← len(List1)
5   len2 ← len(List2)
6   IF len2 > len1
7       FOR i IN RANGE len2
8           IF i < len1
9               ans.append(List1[ i ])
10              ans.append(List2[ i ])
11          ELSE
12              ans.append(List2[ i ])
13          END IF
14      END FOR
15  ELSE
16      FOR i IN RANGE len1
17          IF i < len2
18              ans.append(List1[ i ])
19              ans.append(List2[ i ])
20          ELSE
21              ans.append(List1[ i ])
22          END IF
23      END FOR
24  END IF
25  OUTPUT(ans)
```

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c. Test Cases

Test Case	Input	Expected Results	Coverage
Input list 1 and 2 has 3 datas in a list	List1 = [1, 2, 3] List2 = [“a”, “b”, “c”]	ans = [1, “a”, 2, “b”, 3, “c”]	1, 2, 3, 4, 5, 15, 16, 17, 18, 19, 18, 19, 18, 19, 23, 24, 25
Input of list 1 has 3 datas and list 2 has 5 datas	List1 = [1, 2, 3] List2 = [“a”, “b”, “c”, “d”, “e”]	ans = [1, “a”, 2, “b”, 3, “c”, “d”, “e”]	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 8, 9, 10, 8, 9, 10, 11, 12, 11, 12, 13, 14, 24, 25
Input of list 1 has 5 datas and list 2 has 3 datas	List1 = [1, 2, 3, 4, 5] List2 = [“a”, “b”, “c”]	ans = [1, “a”, 2, “b”, 3, “c”, 4, 5]	1, 2, 3, 4, 5, 15, 16, 17, 18, 19, 17, 18, 19, 17, 18, 19, 20, 21, 20, 21, 22, 23, 24, 25
Input as empty list	List1 = [ ] List2 = [ ]	ans = [,]	1, 2, 3, 4, 5, 15, 16, 17, 18, 19, 22, 23, 24, 25