READING CODE QUESTIONS

For each of the following questions, it may help you to create a trace table which allows you to record the changes to variables at each line in the program.

Example: Look at the code below.

```
Line 1      SET answer TO 0
Line 2      RECEIVE num FROM KEYBOARD
Line 3      SET answer TO num - 2
Line 4      SEND answer TO DISPLAY
```

State the output if **6** is entered at *line 2*

Trace Table

Line	answer	num
1	0	
2		6
3	4	
4		

Make a heading for each variable

List each line number

In each line in which a variable's value is **changed**, write down the value it changes to.

Expressions to assign values / arithmetic operations

1. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      RECEIVE num FROM KEYBOARD
Line 3      SET answer TO num * 4
Line 4      SEND answer TO DISPLAY
```

State the output if **3** is entered at *line 2*

2. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      RECEIVE num FROM KEYBOARD
Line 3      SET answer TO num ^ 3
Line 4      SEND answer TO DISPLAY
```

State the output if the value **2** is entered at *line 2*

3. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      RECEIVE num FROM KEYBOARD
Line 3      SET answer TO num / 5
Line 4      SEND answer TO DISPLAY
```

State the output if the value **40** is entered at *line 2*

4. Look at the code below.

```
Line 1      SET answer TO 5
Line 2      RECEIVE num FROM KEYBOARD
Line 3      SET answer TO answer + 10
Line 4      SEND answer TO DISPLAY
```

State the output if the value **15** is entered at *line 2*

5. Look at the code below.

```
Line 1      SET answer TO 4
Line 2      RECEIVE num FROM KEYBOARD
Line 3      SET answer TO answer * 5
Line 4      Set num TO answer / 2
Line 5      SEND num TO DISPLAY
```

State the output if the value **9** is entered at *line 2*

6. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      RECEIVE num FROM KEYBOARD
Line 3      SET answer TO num - 6
Line 4      Set num TO num ^ answer
Line 5      SEND num TO DISPLAY
```

State the output if the value **8** is entered at *line 2*

Selection constructs using simple conditional statements

7. Look at the code below.

```
Line 1      RECEIVE num FROM KEYBOARD
Line 2      IF num > 10 THEN
Line 3            SEND num * 2 TO DISPLAY
Line 4      ELSE
Line 5            SEND num – 2 TO DISPLAY
Line 6      END IF
```

State the output if the value **12** is entered at *line 1*

8. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      RECEIVE num FROM KEYBOARD
Line 3      IF num <= 80 THEN
Line 4            SET answer TO num + 10
Line 5      ELSE
Line 6            SET answer TO num / 2
Line 7      END IF
Line 8      SEND “The answer is ” & answer TO DISPLAY
```

State the output if the value **80** is entered at *line 2*

9. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      RECEIVE num FROM KEYBOARD
Line 3      IF num <> 10 THEN
Line 4            SET answer TO num + 100
Line 5            SET num TO answer * 2
Line 6      ELSE
Line 7            SET answer TO num * 3
Line 8            SET num TO answer / 2
Line 9      END IF
Line 10     SEND "Num:" & num & " Answer:" & answer TO DISPLAY
```

State the output if the value **10** is entered at *line 2*

10. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      RECEIVE num FROM KEYBOARD
Line 3      IF num < 10 THEN
Line 4            SET answer TO num ^ 3
Line 5      ELSE IF num <= 20 THEN
Line 6            SET answer TO num * 2
Line 9      ELSE
Line 10           SET answer TO answer - 15
Line 11     END IF
Line 10     SEND answer TO DISPLAY
```

State the output if the value **20** is entered at *line 2*

In a loop, it will be necessary for lines in your trace table to repeat until the loop terminates

Trace Table

Line	**answer**	**num**
1	0	
2		6
3	4	
2		5
3	3	
2		4
3	2	
4		

Iteration and repetition using fixed and conditional loops

11. Look at the code below.

```
Line 1      FOR index FROM 1 TO 5
Line 2            SEND “Pizza” TO DISPLAY
Line 3      END FOR
```

State the output of this code.

12. Look at the code below.

```
Line 1      FOR index FROM 1 TO 4
Line 2            SEND index TO DISPLAY
Line 3      END FOR
```

State the output of this code.

13. Look at the code below.

```
Line 1      FOR index FROM 1 TO 4
Line 2            IF index = 3 THEN
Line 3                  SEND “Correct” TO DISPLAY
Line 4            ELSE
Line 5                  SEND “Wrong” TO DISPLAY”
Line 3      END FOR
```

State the output of this code.

Running total within a loop

14. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      FOR index FROM 1 TO 3
Line 3            SET answer TO answer + index
Line 4      END FOR
Line 5      SEND answer TO DISPLAY
```

State the output of this code.

15. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      FOR index FROM 1 TO 5
Line 3            RECEIVE num FROM KEYBOARD
Line 4            SET answer TO answer + num
Line 5      END FOR
Line 6      SEND answer TO DISPLAY
```

State the output of this code if the following list of values is entered, in order, when prompted by the program: **2, 5, 8, 6, 3**

16. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      FOR index FROM 1 TO 3
Line 3            RECEIVE num FROM KEYBOARD
Line 4            SET answer TO answer + num
Line 5      END FOR
Line 6      SEND answer TO DISPLAY
```

State the output of this code if the following list of values is entered, in order, when prompted by the program: **9, 3, 11, 2, 4**

Input Validation

17. Look at the code below.

```
Line 1      REPEAT
Line 2            RECEIVE num FROM KEYBOARD
Line 3      UNTIL num >=15
```

Explain what would happen if the value **10** is entered at *line 2*

18. Look at the code below.

```
Line 1      REPEAT
Line 2            RECEIVE num FROM KEYBOARD
Line 3      UNTIL num < 12
```

Explain what would happen if the value **12** is entered at *line 2*

19. Look at the code below.

```
Line 1      RECEIVE num FROM KEYBOARD
Line 2      WHILE num <=80 DO
Line 3            RECEIVE num FROM KEYBOARD
Line 4      END WHILE
Line 5      SEND "num is valid" TO DISPLAY
```

Describe what happens in line 2 to 5 above if the value of 76 is entered at *line1*

20. Look at the code below.

```
Line 1      RECEIVE temperature FROM <sensor>
Line 2      WHILE num < 0 DO
Line 3            RECEIVE temperature FROM <sensor>
Line 4      END WHILE
Line 5      SEND ON signal TO <refrigerator>
```

Describe what happens in line 2 to 5 above if the value of 2 is detected by the sensor at *line1*

21. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      REPEAT
Line 3            RECEIVE num FROM KEYBOARD
Line 4            SET answer TO answer + num
Line 4      UNTIL num = 0
Line 5      SEND answer TO DISPLAY
```

State the output of this code if the following list of values is entered, in order, when prompted by the program: **3, 2, 5, 0, 4**

22. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      FOR index FROM 1 TO 5
Line 3            REPEAT
Line 4                  RECEIVE num FROM KEYBOARD
Line 5            UNTIL num > 5
Line 6            SET answer TO answer + num
Line 7      END FOR
```

State the output of this code if the following list of values is entered, in order, when prompted by the program: **8, 12, 2, 7, 5, 6, 10**

23. Look at the code below.

```
Line 1      SET answer TO 0
Line 2      FOR index FROM 1 TO 3
Line 3            REPEAT
Line 4                  RECEIVE num FROM KEYBOARD
Line 5            UNTIL num <=8
Line 6            SET answer TO answer + num
Line 7      END FOR
```

State the output of this code if the following list of values is entered, in order, when prompted by the program: **5, 3, 9, 4**