

**Please include your student number in filename (e.g. 1234567), AND below**

Student number:	2147105
Course title:	CS-1CT Introduction to Computing Science (2021)

*Multiple Choice Questions – write the letter of your answer next to the question number*

1. h

2. f

3. e

4. b

5. c

6. b

7. e

8. c

9. a

[Marking:      ]

*Now move to the next page for the written answers.*

The rest of the answer book is pre-formatted to help you submit your answers in a neat format. In general, where you see

->

you should write your answer there ( remove the -> )

Where the expected answer consists of code, we have used the `python` code style from the Styles pane. This is in Courier font which will help you to lay out your code neatly. If you wish to add code, put it on separate lines and use the `python` code style to format it neatly.

Please leave in place all the [Marking: ] items – these will be used in the marking process

10.

```
people
len( people[i] ) <= 3
```

[Marking: ]

11. i.

```
{ "this" : 1, "that" : 7 }
```

[Marking: ]

11. ii.

Line 1 is an assignment statement that associates the integer value 1 to the variable name x.

Line 2 associates the variable y to the dictionary shown.

Line 3 associates the variable z to the dictionary held under the variable y.

Line 4 updates the value under the key "this" in the dictionary, changing it to x, which is the value 1.

Line 5 associates the variable x with the value 4, but as the dictionary is not updated then the value under the key "this" is still 1.

[Marking: ]

**12. Complete the table below, using as many of the rows as you think is necessary, and as much space as you need to describe the mechanism each time:**

Line	Value printed	Mechanism for turning the name x into a value
6	"hello"	The print statement prints the global variable x to the screen, which is assigned to the string "hello" on line 5.

7	42	Under the function foo(), the print statement on line 4 prints x to the screen, which is now associated with 42 on line 3. The global variable was updated and not just the local.
8	42	As the foo() function updated the global variable x on lines 2 and 3, when the print statement prints x to the screen it is now 42.

[Marking:      ]

**13a. Which of the three outcomes does it produce?**

iii.

[Marking:      ]

**14a. How does the given code work, and so, what does it output?**

It outputs the line shown. It defines the function backAndForwardLine() which is useful, so the code does not need to be repeated if multiple drawings want to be done. The variable cellSize is associated to the integer 10 with an assignment statement. This is good because it can be easily changed if the grid size changes. It then associates the variable i to 1 and starts a while loop header. The while loop runs as long as i is smaller than 7, so it will run 6 times. It uses a counter at the end of the while loop body to increment i by 1 each time. The body controls the turtle, using functions to move it forward and right. When moving forward it uses multiples of the cellSize variable to keep it within the grid lines which is good.

[Marking:      ]

**14b. Is it fit for purpose?**

Yes.

[Marking:      ]

**14c. If it isn't fit for purpose, describe a better solution?**

This is not an efficient solution as it cannot be changed easily. It would be better to use a for loop and range function. Set range to a variable under 'lineZigZags'. A user can then change length of line by changing 1 variable instead of 2. And a counter is not needed now.

[Marking:      ]

**15a.**

```
a*b  
20  
20 + c  
27
```

[Marking: ]

**15b.**

```
c % a  
3  
b - 3  
2
```

[Marking: ]

**15c.**

```
x[1]
```

```
"2"
```

```
a + "2"
```

```
Error: can't concatenate int and str
```

[Marking: ]

**15d.**

```
Error: index 1 is not defined. Out of range.
```

[Marking: ]

**15e.**

```
c>a
```

```
True
```

```
b<a
```

```
False
```

```
True and False
```

```
False
```

[Marking: ]

**15f.**

```
x[b]
```

```
Error: index 5 not defined. Out of range.
```

[Marking: 1]

**16.**

1, 2, 3, 4, 5, 6, 2, 3, 5, 6, 2, 3, 4, 5, 6, 2, 3, 5, 6, 2, 7

[Marking: ]

**17a.**

There is no colon. Add a colon to the end of the line.

[Marking: ]

**17b.**

numRows is just an integer, not a list or string that the for loop can loop through. Use the range() function. for row in range( numRows ):

Same on line 5. for col in range( numCols ):

[Marking: ]

**17c.**

->

[Marking: ]

**18a.**

A timer. It only closes the door after it has executed multiple checks to make sure its not opening, closing or blocked.

[Marking:     ]

**18b.**

->

[Marking:     ]

**18c.**

->

[Marking:     ]

**18d.**

->

[Marking:     ]



#### **19a. The `sumDurations` function**

-> This is in the "python code" style to help you lay out your code neatly

[Marking:     ]

#### **19b. The `whenExercising` function**

-> This is in the "python code" style to help you lay out your code neatly

[Marking:     ]

#### **19c. The program code to read the data from the file**

-> This is in the "python code" style to help you lay out your code neatly

[Marking:     ]

#### **19d. The program code for the command line / textual interface**

-> This is in the "python code" style to help you lay out your code neatly

[Marking:     ]

**THE END – Well done.**