

Basic Programming Concepts Test

This is a test of your current ability to read and understand simple pieces of program code. All of the questions cover basic concepts from 1st to 4th year that you may have come across before in Computing.

Please try to read the questions carefully and choose a single option that you think is the correct answer. Write your answers in your jotter. Don't worry if you end up with a low score as this will show which areas you might need extra work on and will also give your teacher know about any misunderstandings you may have about how some of the concepts work.

Q1. The variables `angel` and `egyptian` contain 1.7 and 2.0 respectively, which represent their height. What is written out?

```
IF angel > egyptian THEN
    SEND "Egyptian is taller" TO DISPLAY
ELSE
    SEND "Angel is taller" TO DISPLAY
END IF
```

- A) Egyptian is taller
- B) Angel is taller
- C) Egyptian is taller Angel is taller

Q2. What will the computer display after it has executed the following instructions?

```
SET a TO 7
SET b TO 9
SEND a = b TO DISPLAY
```

- A) True
- B) False
- C) 7
- D) 9
- E) error
- F) a = b

Q3. What value is stored in `y` after the following code executes?

```
SET x TO 10
SET y TO 4
WHILE x >= y DO
    SET y TO y + 2
END WHILE
```

- A) 4
- B) 10
- C) 12

Q4. What will the program display after an input of -1?

```
RECEIVE x FROM (INTEGER) KEYBOARD
IF x > 3 THEN
    SEND "Boo" TO DISPLAY
ELSE
    SEND "-hoo" TO DISPLAY
ENDIF
SEND "!" TO DISPLAY
```

- A) !
- B) Boo
- C) -hoo!
- D) Boo-hoo!

Q5. What will the computer display after executing the following program if the user enters the number 3 for the first receive and 4 for the second?

```
RECEIVE a FROM (INTEGER) KEYBOARD
RECEIVE b FROM (INTEGER) KEYBOARD
SET b TO a
SET a TO b
SEND a TO DISPLAY
SEND b TO DISPLAY
```

- A) 3 4
- B) 4 3
- C) 3 3
- D) 4 4
- E) 3 0
- F) 0 4

Q6. What will the following code output??

```
SET count TO 0
SET output TO ""
WHILE count < 3 DO
    SET count TO count + 1
    SET output TO output & "X"
END WHILE
SEND output TO DISPLAY
```

- A) <no output>
- B) X
- C) XX
- D) XXX

Q7. What will the program display after it's executed if the user types in 7 for x?

```
SET y TO 0
RECEIVE x FROM (INTEGER) KEYBOARD
IF x > 3 THEN
    SET y TO 1
ELSE
    SET y TO 4
END IF
SEND y TO DISPLAY
```

- A) 0
- B) 1
- C) 4
- D) 5
- E) 14

Q8. What will the following code output?

```
SET count TO 0
SET x TO 9

WHILE x > 7 DO
    SET count TO count + 1
    SET x TO x - 1
END WHILE

SEND count TO DISPLAY
```

- A) 0
- B) 1
- C) 2
- D) 3

Q9. How many times is Hello written out?

```
SET i TO 10

REPEAT i TIMES
    SET i TO i - 2
    SEND "Hello" TO DISPLAY
END REPEAT
```

- A) 10
- B) 8
- C) 6
- D) 4
- E) 2

Q10. Which code fragment, inserted in the position indicated between the WHILE and the DO keywords would ensure that the following loop body was only executed 3 times?

```
SET x TO 0
WHILE <Code fragment inserted here> DO
    SET x TO x + 1
END WHILE
```

- A) $x > 3$
- B) $x \geq 3$
- C) $x < 3$
- D) $x \leq 3$

Q11. The following code has been written to input 10 numbers and add them up and write out the total. Do you think it's ok, or if not, which line will be the cause of the *first* compiler or run-time error?

```
FOR loopCount FROM 1 TO 10 DO #1
    RECEIVE nextNumber FROM (INTEGER) KEYBOARD #2
    SET total TO total + nextNumber #3
END FOR #4
SEND nextNumber TO DISPLAY #5
```

- A) No error
- B) Line 1
- C) Line 2
- D) Line 3
- E) Line 4
- F) Line 5

Q12. Which of the following is the closest description of the problem that the code solves?

```
SET x TO 0
WHILE x < 5 DO
    RECEIVE v FROM (INTEGER) KEYBOARD
    IF v = 3 THEN
        SET x TO x + 1
    END IF
END WHILE
```

- A) Read in the value 3 five times
- B) Read in five numbers
- C) Read in and add up five numbers
- D) Read in numbers until a 3 is received

Q13. We need to determine whether someone is of working age. For this purpose we can start working when we are 16 and stop working when we are 65. We have the following if statement

```
IF <Boolean expression to test age> THEN
    <Code if the person is of working age>
ELSE
    <Code if the person is not of working age>
END IF
```

Assuming that the person's age is held in the variable personsAge, which is the best Boolean expression for this if statement:

- A) personsAge < 16 OR personsAge >= 65
- B) personsAge > 16 OR personsAge < 66
- C) personsAge < 16 OR > 65
- D) personsAge >= 16 AND personsAge < 65
- E) personsAge >= 16 AND <=65

Q14. What will the following code print out to the screen?

```
SET a TO 0
SET b TO 0
REPEAT
    SET b TO b + 1
UNTIL a = 0
SEND b TO DISPLAY
```

- A) 0
- B) 1
- C) <something else>

Q15. What is printed out as a result of this code?

```
SET answer TO 0
FOR startNumber FROM 1 TO 5 DO
    SET startNumber TO startNumber + 1
    SET answer TO answer + startNumber
END FOR

SEND answer TO DISPLAY
```

- A) 12
- B) 15
- C) 20
- D) Other

Q16. Which code fragment will successfully complete the following program which prints each persons name one after the other.

```
SET names TO ["Jane", "Henry", "Kirsty", "Robert"]
SET person TO 0
REPEAT length(names) TIMES
    SEND <Code fragment inserted here> TO DISPLAY
    SET person TO person + 1
END REPEAT
```

- A) names[person]
- B) names[1]
- C) names
- D) names["henry"]
- E) Jane