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JBS Programming Bootcamp

Tutorial 3 — Writing Algorithm Fragments

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Algorithms and Problem-Solving

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Section A: Introduction.

1. Write an algorithm fragment to display every number from 35 to 155. Hint: Use a FOR loop for this.

2. Determine the output of the following algorithm.

```
FOR k = 3 TO 13 STEP 4
    DISPLAY k - 1
END FOR
```

3. Evaluate the following Boolean expression and algorithm fragment (show workings):

   (a) (TRUE OR TRUE) AND NOT (FALSE OR FALSE) AND (FALSE OR TRUE) =?

   (b)
```
grit = TRUE
regular = NOT(grit)
IF (regular = FALSE) THEN
    grit = NOT (regular)
ELSE
    DISPLAY "LET'S GO!"
END IF
DISPLAY grit
DISPLAY "BOOM!"
```

4. In a Country called Wakanda, the age of enrolment into the military is 18, but the alcohol drinking age is 21. Write an algorithm fragment that determines if a person in Wakanda can be enrolled in the military and if they can have a beer

Section B: Writing Full Algorithm and Evaluating Fragments

1 What is the output of this fragment?

```
check = FALSE
x = 30
y =  10
WHILE ((x < 31) OR (check = TRUE))
    x = x + 3
    DISPLAY x, NOT(check)
    x = x - y
END WHILE
DISPLAY "Two swords no shield"
```

2 Write an algorithm that reads in two numbers and displays all the squares in the range. For example, if the two numbers are 4 and 6, it should display:

16
25
36

3 Use a While loop that reads N, and displays N-lines of the following sequence.

2	8	2
4	16	10
6	24	18
8	32	26

For example, if the user entered 3, they should see the sequence:

2	8	2
4	16	10
6	24	18

4 Write an algorithm that reads in three Boolean values, and displays "GREAT", if ANY TWO of the three values are TRUE.