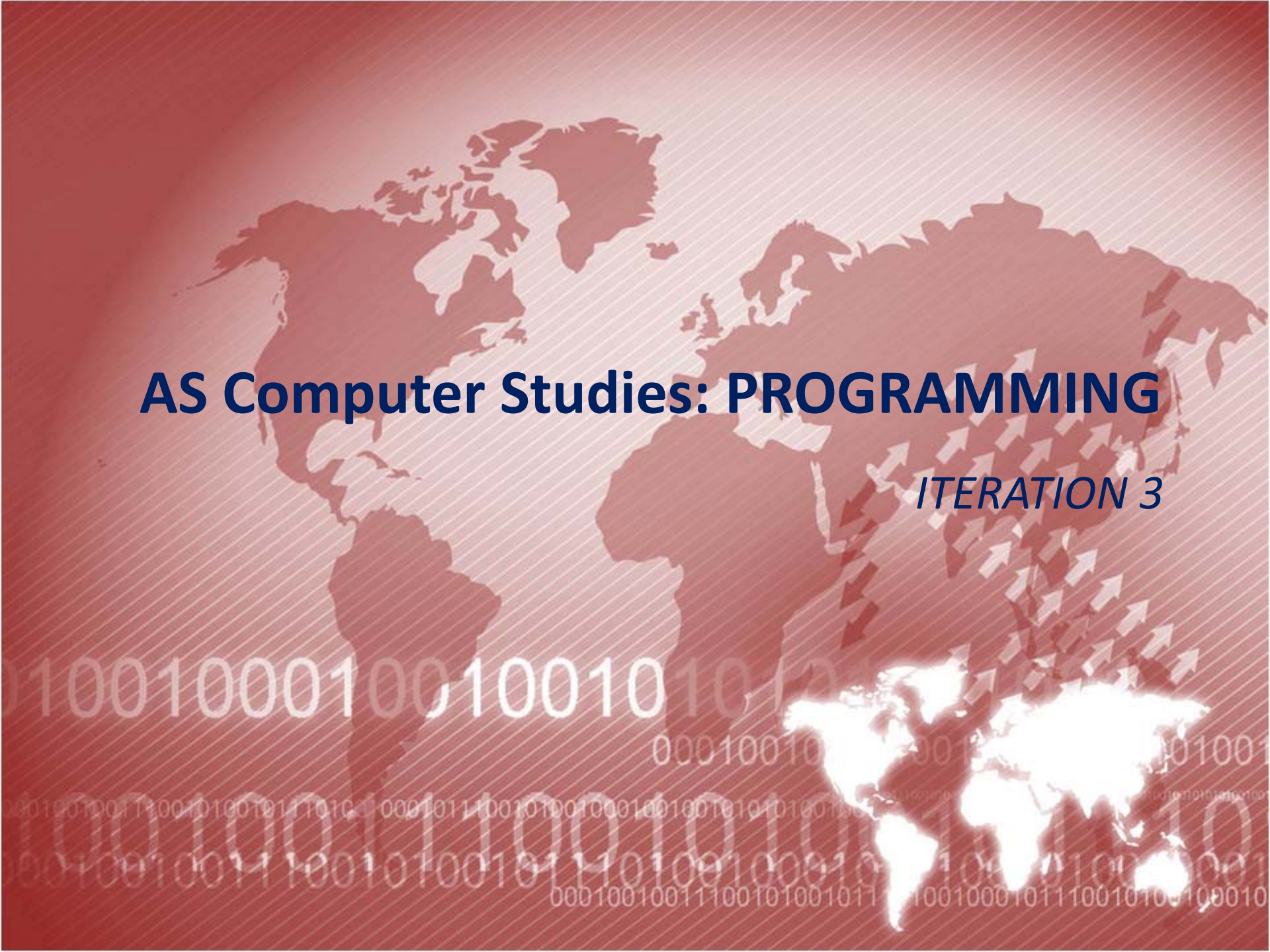


AS Computer Studies: PROGRAMMING

ITERATION 3

Starter

- Write down what you think the code below outputs on screen:

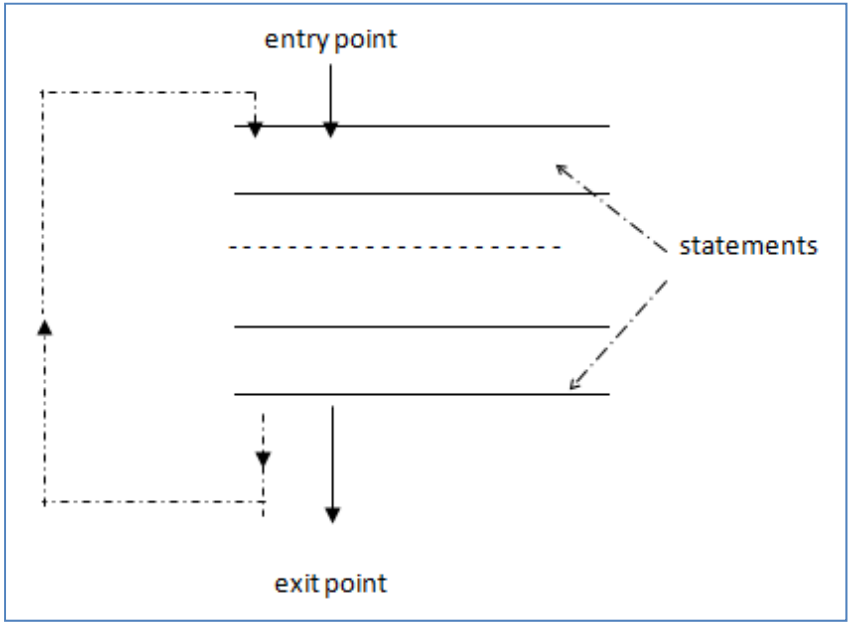
```
Dim intCounter as integer
intCounter = 0

Do while intCounter <10
        console.writeline(intCounter)
        intCounter = intCounter+1
Loop
```

Learning Objectives

- Understand what is meant by **iteration** in programming.
- Explore different types of iteration: **DO loops** and **FOR loops**.
- Understand the **use of iteration** in programming.

Recap: What is Iteration?

- Iteration is simply the ***repetition*** of a sequence of (one or more) statements.
- In programming, this is often referred to as a ***loop***.



- The statements might not be executed at all (***zero repetitions***), or may be executed at least once. Eventually, something must ***stop*** the repetition, allowing the program to continue further.

DO Loops

- The number of repetitions (which might possibly be zero, remember) is determined by **checking some condition**.
- By "Do Loop" we just mean "**Do this, if something is true or false**."
  - For example "If there is a sale, go through **each item** in stock and deduct 10%."
- When using "Do loops," there are two **places** where we might choose to do the check:
  - **before starting** each repetition, i.e. at the **beginning of the loop**
  - just **after finishing** each repetition, i.e. at the **end of the loop**
- ***If we check the condition at the end of the loop, we are certain to execute the statements at least once***.

Using a DO Loop

You simply tell the computer to do something **whilst a condition is true**. It then cycles through the loop until the condition becomes **false**. The condition is **checked EVERY cycle**.

```
Do While condition
    statement(s)
Loop
```

- Simple examples of such **conditions** might be: -

  intOne = 0

  total < 100

  (intCount < 250) And (strName = "Smith")

Let's look at some examples.

Variations of the DO Loop

- **Do Until … Loop** - condition tested ***before*** first entry to the loop

```
Do Until strName = "john"
    console.clear()
    console.writeline("Enter your name")
    strName = console.readline()
Loop
```

- **Do … Loop Until …** - condition tested ***after*** first execution of the loop

```
Do
    console.clear()
    console.writeline("Enter your password"
    strPassword = console.readline()
Loop until strPassword <> ""
```

- **Do … Loop While …** - condition tested ***after*** first execution of the loop

Today's Task

Loops in Programming:

Pink booklet – page 25: Q4,5 (we'll do the first one together).

Write this on the booklet:

"These programs should be written as such the user is asked continuously (Hint: LOOP) for the number / numbers, UNTIL the user answers NO (or WHILE the user says YES) when asked the question: 'Do you want to continue?'"

Task 2

- Once you have written the code to each task, try changing the type of loop and see what happens.
- E.g. if you have used a Do…Loop Until loop, change it to a Do While…Loop, and note down how it is different.
- Can you explain it?

Plenary

- Let's go through your programming tasks.
- I will ask one of you to show your solution to each of the loops programming tasks.