# B31DG Assignment 1 Report

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## Calculation of Application Parameters

A graph with lines and numbers

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Figure – Output Timing Diagram

With reference to the diagram provided (Figure 1), all of the timing parameters are assigned to either a, b, c, d or TSYNC-ON.

Values for a, b, c, and d are determined by the alphanumeric mapping of the students surname. For WILLS: W=4, I=9, L=12, L=12, S=8.

The alphanumerical value for S is used for determine the alternative output behaviour of the DATA line.

For normal data output, the pulses 1, 2, …, c (16) increase by a set amount given by the calculation:

This is implemented in code using a **for** loop. This is for PRODUCTION mode. In DEBUG mode DataPeriodOn1 will be multiplied by 1000 prior to the calculations, therefore

A computer screen shot of numbers

Description automatically generated

Figure - DataPeriodOn(n) loop

Figure 3 shows the initialisation of NumPulses (C) and the DataPeriodOn list. PRODUCTION is a Boolean value to implement a conditional code-compile.

A black screen with green text

Description automatically generatedFigure – Application parameters A

Figure 4 shows the assignment of values for PRODUCTION and DEBUG mode. All values are in microseconds so that the delayMicroseconds function can be used.

A screenshot of a computer program

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Figure – Application parameters B

## Oscilloscope Screen Captures

## Hardware Circuit Images

## Flowchart