

# Lab #2

## Program Design

### Instructions:

Since we were discussing Bletchley Park and decryption in the last class, this is a simple problem in decryption, there are two messages below that have been encoded, where each letter is replaced by a symbol. All you have to do is translate the codes.

Here are a few hints:

- In order of most frequently occurring to least frequently occurring letters in the English language we have:
  - e, t, a, o, i, n, s, h, r, d, l, u, c, m, f, w, y, p, v, b, g, k, q, j, x, z
- So chances are that even in small messages like the ones below, the most commonly occurring symbol will be 'e', 't' or 'a'.
- The most commonly occurring three letter word in the English language is "the"
- Once you have part of the message decoded you can use google to search for the rest of the phrase.

### Submission:

In the Word document you created last week:

PROGRAM-DESIGN-PORTFOLIO.DOC

add in the translation of the two messages.

7. e-mail your document to [Damian.Gordon@dit.ie](mailto:Damian.Gordon@dit.ie) with a subject heading of PROGRAM DESIGN LAB #2 and in the message of your e-mail please let me know your full name, your student number, the name of your programme, the programme code, the name of the module, the year you are in (first year), and your assignment.

**Marking:** Please note, this lab is due for submission today at the end of this lab.

Each of these labs contributes to your final result in this module, so it's best to get the earlier ones done as well as you can, because as the labs continue on they will get harder, so you might as well pick up the easy marks early on.

*"Study hard what interests you the most in the most undisciplined, irreverent and original manner possible." - Richard P. Feynman*

Message 1:

◀↑↻      ⇄⇅↘▲▶◀↻↻↻      ⇄▶↘↻↻△▽      ↘↻▲      ↻↻  
 ↻↻▽↻⇄△↓↻↻↻      ↻△↓↻↻↻▲      ⇄▽      ▶↑↻      △↻↻↻  
 ⇄▶↘↻↻△▽      ▷↑⇄▽↻      ↻▲▲△↻▽▽↓⇄⇄▽      ⇄▽      ⇄  
 ↻↻⇄↓↻↻↻      ⇄△↻      ⇄↻↻↻▶↻↻↻↻      ↻▲      ↻↻↻↻↻↻  
 ↘↻↻⇄⇄▽      ⇄↻▶↑⇄▶→↑      ▶↑↻      ▽▶↻↻↻↻▶      ⇄↻  
 ▶↑↓▽      ▲↻▶▲↻△      ↓▽      ⇄▽▶↻⇄▽↓↻↻▲      ▶↑↻  
 ⇄⇄↘▲▶◀↻↻↻      ⇄▶↘↻↻△▽      ↓▶      ↓▽      ⇄↻↻↓▽▶  
 ↻▼▶↻↻↻▲      ↻↻▽▲      ▶⇄      ↻↻↻↻↻      ⇄⇄↻  
 ↓⇄◁↻▽▶↓→↻▶↻      ⇄⇄↘▲▶◀↻↻↻      ↻▶⇄↻▶↓⇄⇄▽      ⇄↻  
 ⇄⇄      ↓⇄▶↻→△↻↻      ◁⇄△↓↻↻↻      ⇄△      ⇄  
 △↻↻↻      ⇄△      ⇄⇄↘▲▶◀↻↻↻      ◁⇄△↓↻↻↻        
 ⇄⇄↘▲▶◀↻↻↻      ▲△↻↻↓↻↻▶↻▽      ⇄⇄↻      ▽⇄  
 ↻⇄△▶↑↘

Message 2:

▶↑↻      ⇄⇄↻↻▲↓↻↻↻      ↻⇄→↓⇄↻      ↓▽      ⇄⇄▶  
 ↘↻△↻↻▲      ⇄↻↻▶◀↻↻      ↻⇄△      ▶↻↻↻↻↻▶↓⇄→  
 ▶↑↻      △↻▽▶↻▶▽      ⇄↻      ⇄⇄↻      ▲↻△▶↓↻▶↻↻△  
 ↻▶⇄↻▶↓⇄⇄      ⇄⇄↻      ⇄↻      ⇄⇄      ⇄▶↑↻△  
 ↻▶▶      ↻⇄△      ↻↻◁↻↻↻▲↓⇄→      ⇄⇄↻  
 ▶↻↻↻↻↻▶↓⇄→      ⇄⇄▲      ↻▶⇄↻▶↓⇄⇄      ▷↑↻▶↻◁↻△  
 ↓⇄      ↻↻↻▶      ▶↑↻      ↻⇄→↓⇄↻      ↘↻▲  
 ↻↻      ↻↻▽↻⇄△↓↻↻↻      ⇄▽      ↻↻↓⇄→  
 ▶↑↻      ↘↻▶↻△↓↻↻      ↻▲▲△↻▽▽↓⇄⇄      ⇄↻  
 ⇄⇄▲      ↓⇄↻↻↻↻↻▶↻      ↻▶⇄↻▶↓⇄⇄      ⇄↻  
 ⇄⇄▲      ↻↻→△↻↻      ⇄↻      →↻⇄↻△↻↻↓▶▶  
 ⇄⇄↻      ⇄⇄↘▲↻↻↓▶▶▶

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