# Worksheet 1.4

For this worksheet you are expected to work in small groups to complete the following programming tasks using C++ in Visual Studio. For each exercise you should create a new Visual Studio console project. Please ask your tutor to explain the activities in more detail if you are unsure what is expected.

## **Task 1: Dungeon Crawl Game**

Your task is to develop a C++ class called ***DungeonCrawl*** which represents a simple grid-based game board (20 x 6 cells). Each grid cell contains an ASCII character to represent its content. A cell can contain a trap (T), treasure (X), player (@) or empty cell (.). A valid game board must contain a single player, a single treasure and the number of traps is a parameter of the game. An example game board is shown below:

...T................  
.@..........T.......  
......T.............  
....T..........T....  
......T.............  
.........X......T...

Your class definition should use a two-dimensional STL Vector to represent the game board. You will need to include several functions to implement the game itself:

* an initialiser function to randomly place all the required pieces on the board
* an output function to print the current game board to the console
* a collision detection function to check whether the player has either found the treasure or fallen into a trap
* a player movement function which adjusts the players position on the game board depending on which key the user presses:
  + w – move up
  + s – move down
  + a – move left
  + d – move right

NOTE: the game board is toroidal, e.g. if a player steps off the left side of the board they appear at the same row on the right side of the board.

## Task 2: Oh No! There are loads of them

This task involves adding moving enemies to the Dungeon Crawl Game. The number of enemies should be a parameter of the game. Enemies move around the game board at random (i.e. move one cell in any direction (up, down, left or right) once per turn). If a player touches an enemy (i.e. either of them attempt to occupy the same cell) then Game Over!.

## **JOURnal Task 4**

**Your task is to build a working C++ Dungeon Crawl Game in Visual Studio. You may work in a small group or individually to complete this task. Your Journal entry should reflect on your experiences in completing this task. This will include a short explanation of what you did, any problems encountered and important discoveries, and a compressed copy of your project. Please include brief details of the other members of your group (if you choose to work in a group) in your Journal entry.**

**NOTE: Please name your journal entry for this task as TASK 4.**