COMPUTER AND COMMUNICATION TECHNOLOGY

INFORMATION SYSTEMS

SOFTWARE DEVELOPMENT LIFECYCLE

1. ***Introduction:***

- At some stage, most businesses will need a new computerized system to help them with their day to day tasks.
- This could be a system to keep track of all the students' names, addresses, telephone numbers and grades, or it could be a new system for an online bank to let customers open a new account

2. ***Feasibility study :***

- During this stage, the company has to decide firstly whether there is a need for the system and secondly, if there is a need, can the cost of the system be justified against the benefits that it will bring.

3. ***Investigation :***

- The management has taken the decision to proceed with the project.
- The next stage is called the 'Investigation and Analysis' phase.
- First you investigate how the old system works and the problem(s) it is causing and then you analyze it to see how you can solve these problems.

4. ***Analysis:***

- The second stage of the 'investigation and analysis' stage is the analysis.
- Once the investigation has been completed you will have a pretty good idea what is causing the problems with the current system and what the improved system should be able to do.
- The analysis phase is where you look at alternative solutions which could be used to solve the problems. Some of the solutions could include: - adapt the current system.

- There are bound to be bits that are good with it so perhaps keep those and look at changing the things which aren't working - buy an 'off-the-shelf' solution.
- Perhaps use it as it comes or pay to have parts of it adapted to suit your company - create a bespoke system which will fit the company needs exactly. This is the most expensive solution.

5. Design:

- Now that the business analyst has a clear idea of how the system should work, this next phase is when the system is designed.
- Here are some of the decisions that are taken during the design phase:
    - The screen layout is designed
    - The error messages are written
    - The way that you will navigate from one page to another is defined
    - The menu buttons are chosen
    - The font style, size and colour are picked
    - How data will be dealt with is specified
    - What documents can be printed out
    - The hardware will be needed
    - It is during this phase that the requirements specification and the systems specification are written.
    - The requirements specification details how the system will work, how data will flow through it and what it will look like to the user.
    - The system specification details the hardware and software that will be needed to run the system.

6. Development:

- This phase is where the system starts to be written by the software programmers.
- They follow the requirements specification from the design stage and start to create the new system.
- The main things that take place during this phase are:
    - The programmers write and test the code for the system

- A team ensure that the hardware and software required to run the new system are purchased and in place.
- A team of testers are assembled in readiness to test the new system.
- They start to write a test plan which details all of the tests that they will carry out.

7. Testing:

- Once the system has been coded, it needs to be thoroughly tested by a team of testers.
- A test plan will have been written whilst the system is being developed.
- The test plan will contain details of every single thing which needs to be tested.
- For example:
  - - The system opens and closes properly
  - - Work can be saved
  - - Work can be printed
  - - Data is saved to the correct place
  - - When you do something wrong, an error message appears
  - - Data which isn't allowed will be rejected e.g. if you are not allowed to enter an amount above £1,000 on the system then a value of 1,001 will not be allowed.

8. Implementation:

- The system has now been tested and everyone is happy that it is working correctly.
- It now needs to be installed so that staff can use it.
- There are three different ways that you can implement (install) a new system:
  - 1) Direct Changeover- Switch off the old system and switch on the new.
  - 2) Parallel Running- You run the old and new system in parallel for a time.
  - 3) Phased Implementation- You run only part of the new system

9. Documentation:

- Documentation There are two types of documentation that should be produced when creating a new system:
  - User documentation
  - Technical documentation

User Documentation

- The user documentation is intended to help the users of the system.
- The users are usually non-technical people, who don't need to know how the system works. They just need to know how to use it .
- User documentation usually includes:
    - List of minimum hardware and software required to use the system
    - How to install the system
    - How to start / stop the system
    - How to use the features of the system
    - Screenshots showing the system in typical use
    - Example inputs and outputs
    - Explanations of any error messages that might be shown
    - A troubleshooting guide

Technical Documentation

- The technical documentation is intended to help the maintainers of the system (the people who need to keep the system running smoothly, fix problems, etc.)
- The maintainers are usually technical people, who need to know exactly how the system works .
- Technical documentation usually includes:
    - Details of the hardware and software required for the system
    - Details of data structures (data types, field names, etc.)
    - Details of expected inputs
    - Details of validation checks
    - Details of how data is processed
    - Diagrams showing how data moves through the system
    - Flowcharts describing how the system works

10. Evaluation:

- Once the new system has been implemented and is in full use, the system should be evaluated (this means that we take a long, critical look at it).
- The purpose of an evaluation is to assess the system to see if it does what it was supposed to do, that it is working well , and that everyone is happy with it.

11. Maintenance:

- Once the system has been installed and is up and running, there will be a need to keep maintaining it:
- Over time, bugs will be discovered that weren't picked up in the testing.
- These will need to be fixed. Staff or developers will identify parts of the system which could be tweaked to work more efficiently.
- Larger changes might need to be made to the system.
- Perhaps extra functionality or maybe changes in working practices or the law might mean that parts of the system have to be altered.