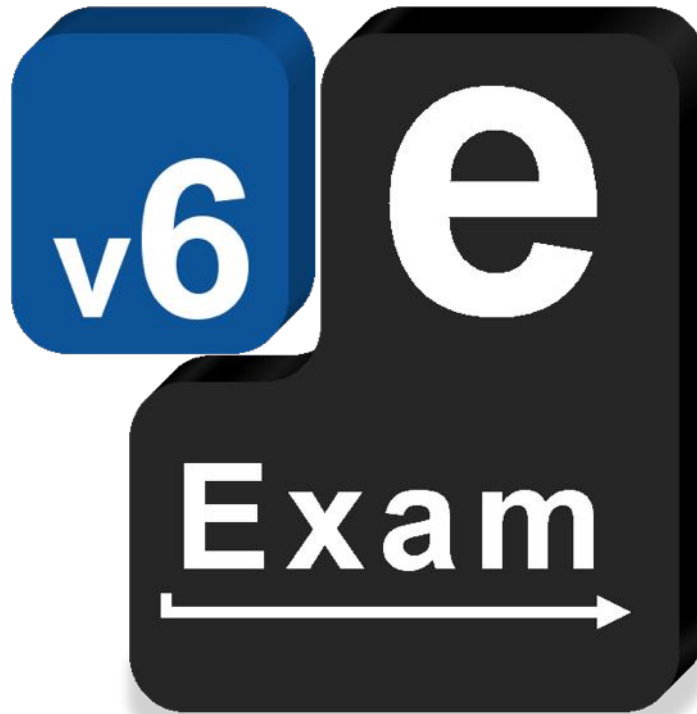# Prep and Practice Guide

e-Exam System v6

This document provides:

- How to obtain and create your own e-Exam System v6 USB stick.
- How to start your computer from the e-Exam System v6 USB stick.
- Practice scenarios for offline e-Exams.

Acknowledgements

Project Team

Lead: Dr Mathew Hillier, Monash University
Collaborator: Dr Andrew Fluck, University of Tasmania (former lead to predecessor versions)

Technical Developers: Mr Martin Coleman (Monash University),

Project Manager: Vilma Simbag (Monash University/University of Queensland).

Former contributors: Mr Lubos Rendek (Monash University), Craig Knott (University of Queensland), Marisa Emerson (University of Queensland), Joshua Hesketh (University of Tasmania).

Project Contact

Leader: m.hillier@unsw.edu.au

This is a work in progress! Last Updated 25 May 2019

* Note some features are still under development.

Contents

This page is intentionally blank

Get Started

Update:

- This guide is for those using version 6.6 of the e-Exam system. Version 6 should boot most Intel~ based laptop hardware. This includes computers that normally to run Apple^ MacOS/OSX, Microsoft Windows* and Linux.
- If you are using an older release (including all version 5 builds), please refer to the previous version of this document intended for version 5.
    - ~ See note 1.
    - * If the computer was sold with Microsoft Windows 8/10 pre-installed, see Note 2.
    - ^ If the Apple computer includes a T2 chip, typically late 2018 onwards, see Note 3.

Required Components

The following is needed to create a working e-Exam Demo USB stick.

- The e-Exam Demo disk image file. It can be downloaded via Transforming Exams website http://transformingexams.com
  (follow the link to the NEW version - this file is hosted by AARNET)
    - o In general you should ask your examining institution for localised copies of e-Exam USBs for practice. However generic demonstrator e-Exam USB disk images can be obtained from e-Exam HQ (TransformingExams.com website). These will be satisfactory for practicing the boot process on your own computer (i.e. to successfully arrive at the e-Exam system desktop or to arrive at the online exam login screen (to ensure networking is functioning).
    - o Important: the generic demonstrator images from e-Exam HQ may not include all features that your examining institution will be using. Anything from the 'desktop' onwards may be different!
- The file is quite large so to save trouble it is recommend to:
    - o Use a download manager with resume capabilities. E.g: the free 'DownThemAll' add-on for Firefox https://addons.mozilla.org/en-US/firefox/addon/downthemall/
    - o Check the downloaded ISO's checksum with the free 'Checksums calculator'. Get it from http://www.sinf.gr/en/hashcalc.html
- One USB storage device at least 20% bigger than the disk image (e.g. a 8GB will work in most cases). It is best that the USB stick is formatted as a single FAT32 partition to begin. Most new USB sticks tend to be so out of the box.
- A computer with a 64bit Intel processor and enough hard drive space to store the disk image file and at least one USB Type A port (or USB-C to A converter).
- A USB 'burning' or 'imaging' application – suggestions are given for each operating system in the relevant section.

Notes:

1. e-Exam version 6 USB sticks only boot computers with 64 bit Intel processors and at least one USB port (they will not boot computers with ARM or AMD processors - future versions may be realised to cater for these processor architectures).
2. Windows 8 or 10 computers may not permit direct booting of a USB stick. While e-Exam version 6 is 'secure boot' compatible, these computers may require the use of SHIFT + Restart to allow booting from an e-Exam USB. See the 'Detailed start-up guide' for further details and solutions.
3. Apple computers that contain the T2 chip that were introduced from 2018 need 'secure boot' to be disabled: Hold down Command+R at power-on. Then use Utilities > Startup Security Utility. Set 'Secure boot' to 'no security' & 'External boot' to 'allow'.

We endeavour to recommend and use free and preferably open source tools wherever possible.

Checking the Downloaded File MD5 Hash

1. Obtain the 'Checksums calculator' software to match your operating system from http://www.sinf.gr/en/hashcalc.html
2. Unzip the archive and run the file.
3. On the AARNET directory listing, locate the MD5 hash by locating the file prefixed with 'md5_' such that the remainder of the file name matches your download file.
4. Download the md5_ file and open it in a text editor.
5. Use the 'Checksums Calculator' to check the hash:
    a. Select the newly downloaded file.
    b. Select 'md5' and click 'Calculate'.
    c. Copy and paste the MD5 hash from ARRNET in to the 'Original checksum' box.
    d. Click 'Compare'.
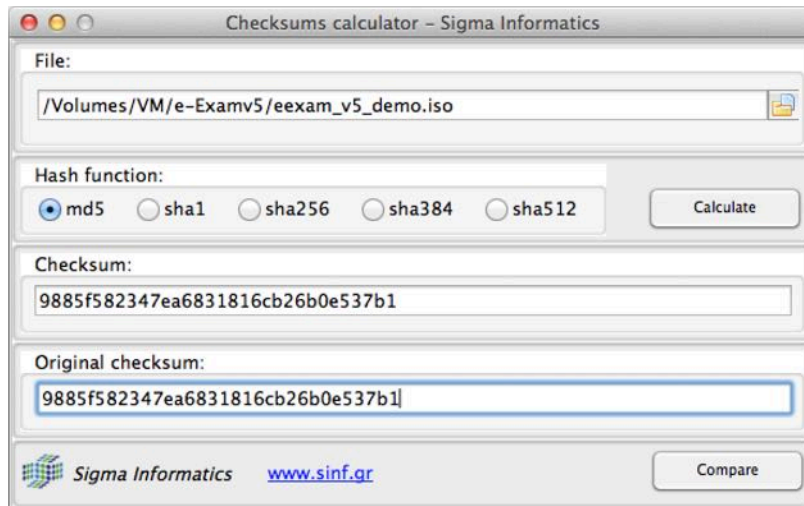
If a dialog box appears with the result "checksums are identical" then the file is intact.

You can now proceed to create an e-Exam USB stick.

Create an e-Exam USB stick

The instructions below show you how to 'burn' the demo e-Exam disk image file to a single new (blank) USB stick.

To create multiple e-Exam USB sticks at once (in batches) see the 'Admin tool guide' or 'Alternative admin guide'.

Warning! To avoid risk of unintentional data destruction, it is highly recommended that you remove all connected USB storage devices/card readers/portable hard disk drives etc before following any of these processes. All data on the targeted storage device will be *irretrievably overwritten* so be sure to follow instructions carefully.

You will need to burn the downloaded disk image to a blank USB stick to create an e-Exam USB. Be sure to check the md5 hash of e-exam disk image files you have downloaded.

Etcher for all systems:

1. Obtain the "Etcher" software (100MB file) for your operating system (Apple, Windows, Linux) from https://www.balena.io/etcher/
   Note: this software can only burn 1 USB at a time.
   Warning! This software will overwrite (destroy) all data on the device/USB/drive that is selected as the target of the write operation.
2. Open the Etcher software (it doesn't need to be installed).
   The Etcher window will appear:
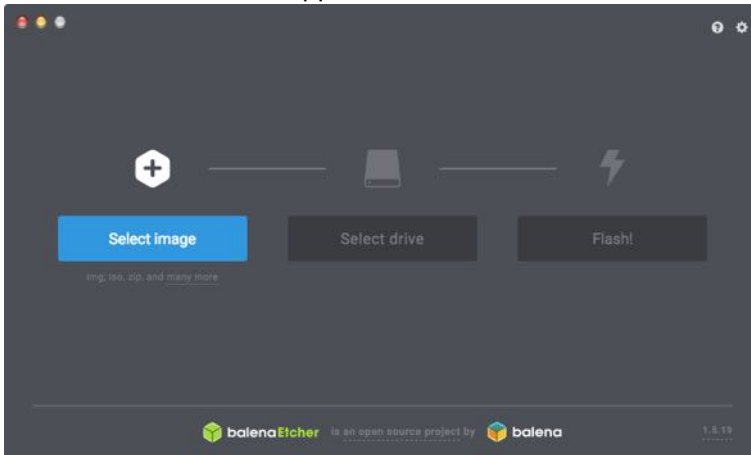
3. Next, press the 'Select Image' button. Then navigate to the e-Exam disk image file and select it. When correctly selected the image file name will appear.
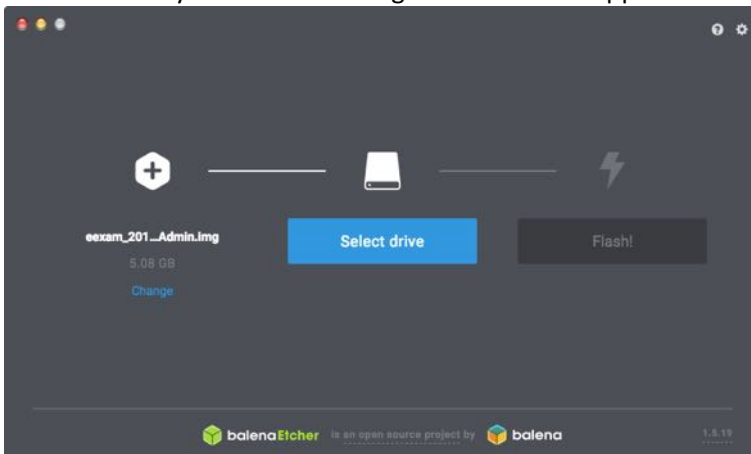
4. Next, Insert a blank USB. It is best that the USB is formatted as a single fat32 drive/partition. Most USBs are so when purchased new. However existing e-Exam USBs will also be detected. The software should detect the USB and update the screen accordingly. If you have multiple USBS inserted you may need to press the 'Select drive' button or 'change' link to ensure you select the correct one. *Warning – be careful you select the correct device or you will destroy data on the wrong drive!*
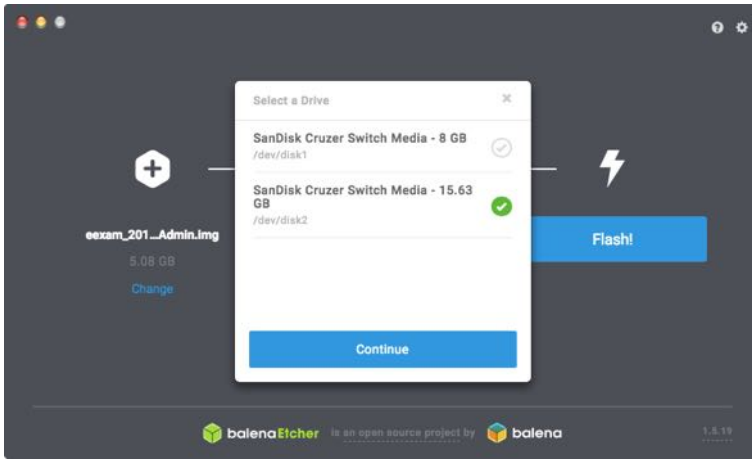
5. When you are sure you have the correct target device, click the 'Flash' Button.

6. A progress indicator will be displayed and the completion screen shown when done.

7. You can now boot a computer from the newly minted e-Exam USB stick.

User documentation for Etcher is available at https://github.com/balena-io/etcher/blob/master/docs/USER-DOCUMENTATION.md

Use the e-Exam USB stick

Before running the newly created e-Exam USB, your computer must be completely shut down. Not just put to sleep or suspended – you will be booting into a completely new operating system (Ubuntu)

- Windows 10: hold down SHIFT and choose 'Shutdown'.
- Apple: Apple menu, choose Shutdown.

1. With the computer turned off, insert the USB stick.
2. Turn on the power – i.e. press and release the power button AND quickly…
   a. on windows hardware: repeatedly tap the one time boot key - F12 is common, see a longer list by computer brand in the 'Quick start guide' or 'Detailed Start up guides'.
   b. on Apple: hold down Alt/Option and wait...).
3. A boot menu should appear.
4. Select the USB device to boot (on a Apple this might appear as 'Windows' or 'EFI') and press enter.
5. The e-Exam system should start.

If the above fails to boot the e-Exam USB…

- Windows 10 users - in Windows or at the Windows Login screen: hold down SHIFT and choose **'Restart'**. On the Advanced options' screen select 'Use a device', then select the USB device.
- Apple users – If your laptop is a model was introduced from 2018 it has a T2 security chip, then you need to disable 'secure boot'. Doing so will not harm the laptop. Hold down Command+R at power-on. Then use Utilities > Startup Security Utility. Set 'Secure boot' to 'no security' & 'External boot' to 'allow'. See this article to help identify if your Apple laptop has a T2 chip https://www.idownloadblog.com/2018/11/20/mac-models-t2-chip-howto/

OR

- Consult the 'Quick start guide' or 'Detailed start-up guide' that includes step by step guides to match your hardware, troubleshooting and potentially needed configutation procedures. These guides can be obtained from the TransformingExams.com site.

DIY Practice Scenarios for offline exams

Use these scenarios to practice using the e-Exam System software and to practice what to do in event of technical issues. These scenarios target use in offline exams (where no network is used).

The demo version is configured for practice sessions.

A sample question document is provided for offline exams which will allow you to practice typing answers.

The scenarios below assume you can start your computer with an e-Exam USB.

Demo USB stick clean-up step

Note! Demo e-Exam USB versions that may be provided in a practice/set-up session or from a library may be configured to invoke an extra 'clean up' step when you use the big red 'Shut Down' button. This reset choice won't appear in a real exam!

If the extra 'clear exam' dialog box appears then you have three choices:
- 'Cancel'
    - To leave the dialog.
- 'Clear my data Shut down'
    - This re-sets the stick to an 'as new' state. Use this to wipe your data and answers file.
    - ***Please use this before you return the USB stick***.
- 'Keep my data Shut down'
    - Use this when you want to continue practicing. It will retain your data and answers file so you can practice recovery and loss of power style scenarios.

The regular shut down confirmation dialog will still appear and you need to confirm it as normal.

Note – During the real exam you will not see the 'clear exam' dialog. This is also the case if you created the e-Exam System USB yourself.

To 'Manually Reset an e-Exam USB' just delete the contents of the 'Answers' drive.

Scenario 1. Regular procedure for offline exams

The following scenario outlines the most common use case for an offline exam that uses an office document (see the 'Quick start guide' for more detail).

To start the exam:

1) After the e-Exam System has started you will you see the desktop.
2) The 'e-Exam Starter' dialog should be visible in the centre of the screen.
3) Enter your student information and click the 'Start Exam' button (don't be tempted to click other buttons!)
4) The exam file will be opened ready for you to begin your exam.

    Note: In the background, the original question file will be copied to the 'Answers' area and the file name prefixed with your student ID (You can confirm the file is present by clicking the 'A' Answers button on the side bar).

5) Please read the instructions on the cover page.
6) Please fill in the information in the upper portion of the cover page (e.g. name, student ID number, and USB stick number).
7) Next you can begin responding to the example questions. Be sure to type into the spaces indicated under each question.
8) It is best to get into the habit of using **CTRL+S** ('File > Save') every couple of minutes.

    Note: while an auto recovery save occurs every **2** minutes (only when using an Libre Office application) it is always a good habit to regularly save the file.

When you are finished writing

1) Use **CTRL+S** ('File > Save') one last time and then
2) Exit the word processor using 'File > Exit'.
   (if applicable, Exit all other open programs you have running)
3) Shut down the computer properly using the big red 'Shut Down' button on the left side bar.

Note: The shut down procedure runs checks and clean-up processes so please shut down properly. Don't remove the USB stick until the system has powered down as this may result in corrupted data on the USB stick.

4) Wait until the shut down animation has stopped and the screen has gone dark – then remove the USB stick.

Note: On the rare occasion you may need to 'hard' switch the power at the very end. If so, hold down the power button on your laptop until the power goes off.

Scenario 2. Manual procedure

If the automatic e-Exam Starter script were to fail this is what to do to manually begin and save your exam answers (note this has yet to happen, but it is good to know just in case!)

After the e-Exam System has started you will you see the desktop.

If the 'e-Exam Starter' dialog is not visible you can try to manually retrieve it:

1. Click the Dash Home button. A search box will appear,
2. Type in "starter" and
3. Press the 'Enter' key.
4. The 'e-Exam Starter' dialog will appear
5. Type your student information into the boxes and click the 'Start Exam' button (don't be tempted to click other buttons!).

If this is successful the exam file will open.

If nothing happens then try the manual access procedure below:

1. Click the Q – 'Questions and Materials' button on the side bar. The file manger should open with the original question file visible.
2. Double click it to open it.
3. Once the file is open (you will notice that you cannot type into the document),
4. Next use 'File > Save as'.
5. On the 'Save As' dialog, direct the save location to the 'Answers' drive.
6. Name the file by prefixing your student ID number to the beginning of the file name. e.g 12345678_practice_exam.doc
7. Press the 'Save' button.

You should now be able to begin typing answers into the document.

1. Please read the instructions on the cover page.
2. Please fill in the information in the upper portion of the cover page (e.g. name, student ID number, and USB stick number)
3. Next you can begin responding to the example questions. Be sure to type into the spaces indicated under each question.
4. It is best to get into the habit of using **CTRL+S** ('File > Save') every couple of minutes.
5. When you are finished writing use CTRL+S ('File > Save') one last time and then exit the word processor using 'File > Exit'.
6. Shut down the computer properly using the big red 'Shut Down' button on the left side bar.

Note: The shut down procedure runs a number of checks and clean-up processes so please do NOT be tempted to use a 'hard' power down (i.e. holding down the power button) and don't just remove the USB stick as this may result in corrupted data/answers file on the USB stick.

7. Wait until the shut down animation has stopped and the screen has gone dark.
8. On the rare occasion you may need to 'hard' switch the power. If so, hold down the power button on your laptop until the power goes off.

You can now remove the USB stick.

Scenario 3. Recovering from a technical fault or loss of power (troubleshooting)

This is what to do if your laptop freezes, crashes or runs out of battery power.

Application Freeze

If a single application, such at the word processor crashes but the rest of the system continues to work you can re-open the software to continue where you left off. The auto recovery save should have been occurring every **2** minutes (when using Libre Office applications only) – remember to use CTRL+S (File > Save) often!

To re-open your answers file:

1. Click the A – Answers button on the side bar.
2. The answer file should be visible (i.e. it should have your student ID number prefixed to the file name).
3. Double click it to open it.
4. You may encounter a 'Recovery' dialog, in which case read the onscreen instructions carefully and follow the prompts to recover the last saved version - see 'Auto Recovery Procedure' for more details (Alternatively the answer file may open directly).

You will now be able to continue from the point of the last auto save (or full save).

Whole system Freeze

If the whole computer becomes unresponsive, wait a minute to see if it unfreezes itself. If not, you will need to 'hard' power off.

1. Hold down the power button on your laptop until the power goes off.
2. Wait for 10 seconds or so.
3. Ensuring the USB stick is properly inserted, power on the computer as normal.
4. Follow the process you would normally when starting the e-Exam System (e.g. if you set-up automatic start then it should do so, otherwise or you will need to manually start using the one time boot key).
5. When you arrive back at the desktop. The 'Existing Exam Detected' dialog box should appear indicating it has detected a previously started exam.
6. Click the 'Continue existing exam' button to return to the exam where you left off.
7. You may encounter a 'Recovery' dialog, in which case read the onscreen instructions carefully and follow the prompts to recover the last saved version - see 'Auto Recovery Procedure' for more details (Alternatively the answer file may open directly).

You will now be able to continue from the point of the last auto save (or full save).

Change or re-start the computer

If you need to re-start or change computers mid way through an exam (for example the battery is becoming low and you are not able to re-charge it)

1. If possible, use 'File > Save' one last time and then exit the word processor using 'File > Exit'.
2. Shut down the computer properly using the big red 'Shut Down' button on the left side bar.

   Note: The shut down procedure runs a number of checks and clean-up processes so please do NOT be tempted to just remove the USB stick as this may result in corrupted data/answers file on the USB stick.

3. Wait until the shut down animation has stopped and the screen has gone dark.
4. On the rare occasion you may need to 'hard' cycle the power. If so, hold down the power button on your laptop until the power goes off.

You can now remove the USB stick (i.e. if you need to change computers).

When you are ready to re-start follow the normal start-up procedure.

1. If re-starting the same computer, wait for 10 seconds or so before pressing the power button again.
2. Ensuring the USB stick is properly inserted and power on the computer as normal.
3. Follow the process you would normally when starting the e-Exam System (e.g. if you set-up automatic start then it should do so, otherwise or you will need to manually start using the one time boot key).

4. When you arrive back at the desktop. The 'Existing Exam Detected' dialog box should appear indicating it has detected a previously started exam.
5. Click the 'Continue existing exam' button to return to the exam where you left off.
6. You may encounter a 'Recovery' dialog, in which case read the onscreen instructions carefully and follow the prompts to recover the last saved version - see 'Auto Recovery Procedure' for more details (Alternatively the answer file may open directly).

You will now be able to continue from the point of the last auto save (or full save).

Change incorrectly entered student details (re-start with a new exam file)

If you accidentally typed your details incorrectly when starting the exam and you noticed before you have started answering questions, can just begin again with a new file.
1. Use 'File > Exit' to close the word processor.
2. Click the Dash Home button. A search box will appear, type in 'Autostart' and press the 'Enter' key.
3. The 'Existing Exam Detected' dialog box should appear indicating it has detected a previously started exam.
4. Click the 'Start new exam' button.
5. The 'e-Exam Starter' dialog will then appear.
6. Enter your correct student information and click the 'Start Exam' button (don't be tempted to click other buttons!)
A new copy of the exam file will be opened ready for you to begin your exam.

If you accidentally typed your details incorrectly when starting the exam but you did not notice until much later.
1. Please continue until the end of the exam, be sure to use 'File > Save' regularly.
2. However at the end of the exam, before you exit the word processor, use 'File > Save As' (instead of File > Save)
3. On the 'Save As' dialog, direct the save location to the 'Answers' drive.
4. Re-name the file by prefixing your correct student ID number to the beginning of the file name.
   e.g. 12345678_practice_exam.doc
5. Press the 'Save' button.
6. Now exit as normal, use 'File > Exit' to exit the word processor.
7. Shut down the computer properly using the big red 'Shut Down' button on the left side bar.
   Note: The shut down procedure runs a number of checks and clean-up processes so please do NOT be tempted to just remove the USB stick as this may result in corrupted data/answers file on the USB stick.
8. Wait until the shut down animation has stopped and the screen has gone dark.
9. On the rare occasion you may need to 'hard' switch the power. If so, hold down the power button on your laptop until the power goes off.
You can now remove the USB stick.

Optional - Delete unwanted files from the Answers Area

Be extra careful using the delete function! If you are unsure, just leave the unwanted files in place.
1. Click the A – Answers button on the side bar.
2. Multiple answer files may be visible. If you only see one file then leave it alone! Be doubly sure of which file you want to keep and those you want to delete (the file to keep should your correct student ID number prefixed to the file name; you can open it again to check!)
3. When you are sure of the file(s) you want to delete, drag the file(s) to the trash icon. The files(s) will be removed from the 'Answers' area.
4. Next click on the trash icon.
5. The unwanted file(s) should be visible.
6. Click the 'Empty Trash' button to permanently remove it.

The Auto Recovery Procedure

Note: the auto recovery screen will not usually appear after a restart. Instead the 'continue exam' will allow the previously used file to open directly. However, the Auto Recovery procedure may be activated when restarting after a crash has occurred.

1. If/when the 'Recovery' dialog appears carefully read information presented on the dialog.
2. The dialog will list the files available for recovery. If there is more then one, click the file you want to recover.
3. Press the 'Start Recovery' Button.
4. The dialog will then display the results.
5. If successful, you can press the 'Finish' button.
6. The recovered file should open.

The recovered file should contain your work up to the point of the last successful auto save or full save.

How to practice the recovery process

Start by following the standard exam procedure as per Scenario 1 to open a document for editing. You can try a smooth restart or simulated sudden system crash.

a) A smooth restart:

Having typed for at least three minutes… (i.e the system will have enacted auto save at least once).

1. Click on the 'Shut Down' button directly.
2. Let the system close the word processor (you may click 'save' on the way through – note if you click 'discard' then all changes will be lost!).
3. Click on 'Keep my data Shutdown' if prompted.
4. Confirm the shutdown.
5. Restart the system using the same USB.
6. When you arrive back at the desktop. The 'Existing Exam Detected' dialog box should appear indicating it has detected a previously started exam.
7. Click the 'Continue existing exam' button to return to the exam where you left off.
   a. You may encounter a 'Recovery' dialog, in which case read the onscreen instructions carefully and follow the prompts to recover the last saved version - see 'Auto Recovery Procedure' for more details (Alternatively the answer file may open directly).
8. You should now be able to see the previously edited exam document that will contain the typing up until the point of the last save event.

b) Simulate a sudden crash:

Having typed for at least three minutes… (i.e the system will have enacted auto save at least once).

1. Remove the USB stick from the computer! (note never do this in real exams!)
2. The system will either:
   a. Display a dialog advising that the USB has been removed. This means the system has detected that it has lost contact with the USB. Unfortunately you cannot just plug it back in. The system needs to be shut down and restarted. Click the 'shut down' button.
      Or
   b. The screen will go blank and the system will power itself off.
3. Restart the system using the same USB.
4. When you arrive back at the desktop. The 'Existing Exam Detected' dialog box should appear indicating it has detected a previously started exam.
5. Click the 'Continue existing exam' button to return to the exam where you left off.
   a. You may encounter a 'Recovery' dialog, in which case read the onscreen instructions carefully and follow the prompts to recover the last saved version - see 'Auto Recovery Procedure' for more details (Alternatively the answer file may open directly).
6. You should now be able to see the previously edited exam document that will contain the typing up until the point of the last auto recovery save event.

Note: Autosave is limited in scope

The e-Exam system has autosave features but this functionality is specific to particular software applications. It is not a system-wide feature. The contexts that have autosave are:

a) Libre Office suite applications within the e-Exam system where documents are part of an 'offline' exam. Word processor documents and spreadsheets are covered when these are edited in Libre Office. Autosave has been set to 2 minutes by default. Autosave may not work in cases where downloaded files are being edited as part of an online exam or where files are edited in other applications.

b) Moodle quiz form content where this setting has been enabled in the Moodle server Administration settings AND where 'fault tolerant' mode has been enabled in the Quiz settings. Auto save is typically set to every 1 minute.

In all other contexts and using all other applications auto save may not be available. E.g Python IDLE, Scratch, Mathematics applications etc. Consult the documentation for individual applications to determine if autosave can be enabled.

Good luck :-)