`Student proposed?	*N*	
Can this project as described below be completed outside a lab, i.e. done remotely?	*Y*	
ID:	**TDR_01**	
SUPERVISOR:	Daniel Ramotsoela	
TITLE:	A single sign-on solution using a self-encrypting USB drive	
DESCRIPTION:	The exponential growth of the internet has meant that users are registered on many systems which mostly require usernames and passwords for authentication purposes. It is recommended that users should not use the same password for multiple websites for security purposes but this is impractical given that users are on average registered to around 25 password protected systems. Password management systems which provide pseudo single sign-on (SSO) capabilities are a popular solution to the above mentioned problem.	
DELIVERABLES:	The student is expected to deliver a single sign-on solution using a self-encrypting USB drive. The system should be a standalone device which can be plugged into any commercial PC to allow the user to securely log into any of their accounts. The student is also expected to deliver an extensive attack surface analysis of the system.	
SKILLS/REQUIREMENTS: Include any software requirements	Proficient programmer with an interest in network security. Knowledge of Computer Architecture will be beneficial.	
GA1: Problem solving: *Identify, formulate, analyse and solve complex* engineering problems creatively and innovatively*	The student will to design and implement the system using network security design principles to ensure the confidentiality, integrity and availability of the data. The student will need to identify the various sub-components and tools required to fulfil the task.	
GA 4: Investigations, experiments and analysis:** *Demonstrate competence to design and conduct investigations and experiments.*	1. An investigation into the tools required to design and implement the system. 2. Experimentation to evaluate how the system maintains the key network security objectives.	
EXTRA INFORMATION:	https://www.usenix.org/conference/usenixsecurity14/technical-sessions/presentation/li_zhiwei	
AREA:	System Security	
Project suitable for ME/ ECE/EE/ All programmes?	EE/ECE	

Hardware Requirement:

The student will have to procure the hardware required for this system themselves. The student can use any hardware platform of their choosing but it is recommended that they use a low cost microprocessor development board to reduce the hardware design burden on the student. Alternatively the student can use any standalone microcontroller of their choosing but this may require additional hardware and lab equipment. The former approach allows the student to complete the project remotely while in the latter case lab access may be a requirement.