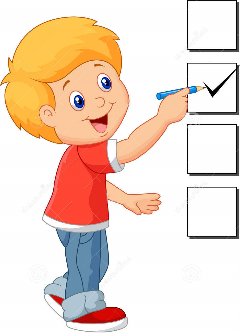
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| **Group** 8 | Death Star Weakness Exfiltration Scheme |
| **Major:** | **Team members:** |
| EE | Nicholas Michael |
| CEG | Mason McDaniel |
| IT | Chase Ennis |
| IT  CS | Cade Wrinkle  Michael Mowad |

****Design Requirements**

Objective 1: The Raspberry Pi will be able to identify the 10 PNG images of the death star out of the 100 PNG images given on the supplied USB storage device.

Objective 2: The data must be transmitted quickly from the Raspberry Pi to the rebel server. (speed)

Objective 3: The 10 images will be transmitted wirelessly from the Linux server to the Rebel server.

Objective 4: The data will be transmitted securely and then be properly verified. (encryption, hashing)

Objective 5: The Linux Server will filter out the 10 weaknesses of the 10 PNG death star images.

Objective 6: The weaknesses must be displayed on a mobile application. (exposed)

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| Req No. | Obj No. | Requirement |
| 10 |  | The design shall include a Raspberry PI |
| 20 |  | The design shall include a Linux Server |
| 30 |  | The system shall include a communication device attached to the Raspberry PI. |
| 40 |  | The system shall include a communication device attached to the Linux Server. |
| 50 | 1 | Software running on the Raspberry Pi shall read 100 PNG images stored on a USB containing 100 1024x1024 PNG images. |
| 60 | 1 | Software running on the Raspberry Pi shall discriminate between the 10 death star images containing red-circled weaknesses, and the 90 non-death star images. |
| 70 | 3 | The communication device attached to the Raspberry PI shall transmit the 10 death star images to the Linux server through a wall containing a transparent window and a closed door. |
| 80 | 4 | All transmissions between the communication devices must be encrypted using an encryption algorithm with a key length greater than or equal to 64 bits. |
| 90 | 2 | The Raspberry PI shall successfully transfer and verify the 10 death star images to the Linux server within the 600 second timeframe. |
| 100 | 4 | The integrity of the transmitted images shall be verified between the Raspberry PI software and Linux Server via an MD5 checksum. |
| 110 | 4 | The system shall retransmit each image where the checksum does not match until all the images are successfully transferred and verified. |
| 120 | 5 | The Linux server shall crop the 10 death star images to include only the red-circled weakness for each image. |
| 130 | 6 | The weaknesses shall be exported to an Android or iOS mobile application and displayed in a horizontal grid. |

Definitions:

Discriminate – the ability to create a binary classification.

Wireless Channel – the physical communication layer used to communicate wirelessly without using Wi-Fi, Bluetooth, or standard frequencies

Communicate – the ability to send the images from the Raspberry Pi to the Linux Server.

Identify – the ability to discern a characteristic.

Quickly – within the 600 second transmission window.

Securely – such that any intercepted message contents may not be understood in whole or in part throughout the duration of the exchange.

Mobile application – either an Android or IOS application