



# EXAMPLE PORTFOLIO ACTIVITY

Information Communications Technician (Level 3)

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## Introduction

The purpose of this document is to showcase to apprentices how to make the most of an activity presented in a portfolio element report. This document will follow the STARR technique, which is a technique recommended by City and Guilds, one of the leading awarding organisations within the IT apprenticeship sector.

A graphics card install is a relatively easy task. However, by using the STARR approach and by using a bit of extra thinking, many of the KSBs can be hit with this kind of activity. On its own, it isn't enough to have what is considered a "robust" coverage of the KSBs. This being said, several similar activities would make the portfolio robust. The specific KSBs covered are:

**K2, S8** Describes basic elements of technical documentation, its interpretation, completion and importance in escalation as appropriate.

**S1** Explains how they interpret and prioritise internal or external customer's requirements in line with organisation's policy.

**K8, S5, S6, B2** Identifies and applies methods of communication, selecting technical and/or nontechnical language in reflection of the audience to inform progress and escalation and develop and maintain effective working relationships with them'.

**K14** Defines the principles of operating systems and describes the architecture of hardware systems and devices.

**K13** Outlines how they have a basic awareness of legislation in relation to disposal of waste materials for example Waste Electronic and Electrical regulations.

**K9** Describes different types of maintenance and preventative measures to reduce the incidence of faults.

**K10, S4** Explains how they ensure that they operate safely and securely across platforms and responsibilities applying the key principles of security including the role of People, Product and Process in secure systems.

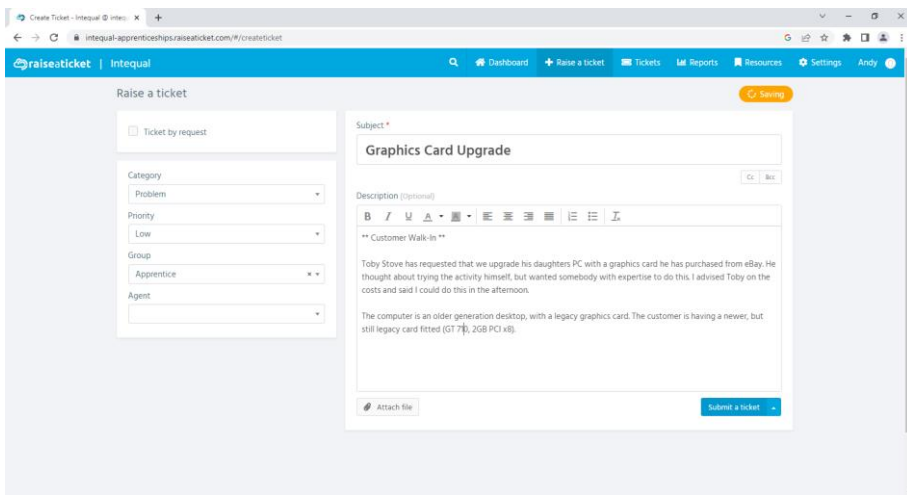
**K19** Explains the principles of Test Plans by reference to their role and significance.

**S2** Critically analyses their use of tools and techniques to undertake tasks such as installation, maintenance or fault rectification.

## Graphics Card Install

### Situation

Today a customer came into the shop to ask for his daughter's computer to have a new graphics card fitted. I was on shop front today, so this was a job for me to fix. The customer had already bought the graphics card from eBay, but wanted somebody with expertise to fit the graphics card. I raised this as a ticket on our ticketing system.



The screenshot shows the 'Raise a ticket' form in the Raiseaticket system. The form includes a 'Ticket by request' checkbox, a 'Category' dropdown set to 'Problem', a 'Priority' dropdown set to 'Low', a 'Group' dropdown set to 'Apprentice', and an 'Agent' dropdown. The 'Subject' field contains 'Graphics Card Upgrade'. The 'Description' field contains the following text:   
\*\* Customer Walk-in \*\*  
Toby Stove has requested that we upgrade his daughters PC with a graphics card he has purchased from eBay. He thought about trying the activity himself, but wanted somebody with expertise to do this. I advised Toby on the costs and said I could do this in the afternoon.  
The computer is an older generation desktop, with a legacy graphics card. The customer is having a newer, but still legacy card fitted (GT 710, 2GB PCI x8).  
At the bottom of the form, there is an 'Attach file' button and a 'Submit a ticket' button.

**Commented [AT1]:** Setting the scene and logging the ticket.

**Commented [AT2]:** K2, S8 Describes basic elements of technical documentation, its interpretation, completion and importance in escalation as appropriate.

The ticketing system we use is called "Raiseaticket". This acts as our primary form of technical documentation. It is important that I use this system and log as much information as possible. This is because if I leave the company, I am dismissed or I am sick, other engineers can pick up where I left. It also leaves a trail of evidence in case there is a problem.

### Task

This activity is a low priority activity. Most of our walk-ins are low priority, as they are not planned in and would have a lesser time frame than activities that are planned in. This being said, I had some time in afternoon to get this done.

I used verbal, face to face communication with the customer as this was a walk in. The customer had a relatively good understanding of what was required, so I used technical language. We discussed the graphics card specification and the reason for the upgrade. The graphics card was a Nvidia GT 710. This is a legacy card, but the customer just wanted a cheap card to allow his daughter to play a low-end game. In terms of the other specifications of the computer, the machine also had:

- QuadCore Intel Core i5-2320, 3000 MHz
- Intel Strawberry Mountain DQ67SW
- 8192MB RAM
- Windows 10 Pro x64 bit

The setup is a x64 bit architecture. Before I engaged in the activity, I needed to make sure that the graphics card was compatible with this system. I can see that the GT 710 is a x8 PCI-E card. The

**Commented [AT3]:** S1 Explains how they interpret and prioritise internal or external customer's requirements in line with organisation's policy.

motherboard has space for x16 and x1 card. Luckily, PCI-E cards are backwards compatible meaning that a x8 will fit in the x16 slot. There were no other considerations for this, apart from testing that the graphics card works as intended. I discussed with the customer that I would do a short stress test on the graphics card to ensure that it works as intended. This meant that if the customer needed to return it, he could and he would have some evidence for the return. ]

This information was obtained by using AIDA64 Extreme, a tool we use to check information relating to a computer.

The tools I would need for this job included:

- A Phillips screwdriver to remove the case and remove the old graphics card
- A working OS with credentials (supplied by the customer)
- Compressed air (although this may not have been required)
- Dust mask and eye protection to avoid dust exposure (although this may not have been required)
- FurMark software to stress test the graphics card
- Latest Nvidia driver for the GT 710
- AIDA64 Extreme to check system specifications before and after

I assumed that the customer knew that the graphics card was suitable for the game he wished for his daughter to play. I spoke with the customer about what he wanted to happen with the old graphics card. He said that he would like this to be disposed of by us if we could. I informed him that I would put this in our WEEE area and this would be disposed of inline with WEEE legislation. In the UK, we are regulated by the Waste Electrical and Electronic Equipment legislation, which aims to minimise the environmental impact of electrical and electronic equipment. The way we do this as a company, is we use a 3<sup>rd</sup> party to dispose of our equipment. When the area starts to get full, we arrange a collection. As part of this activity, I would also log this on spreadsheet that tracks our waste. This will be seen in the results section of this activity. ]

## Action

The first step was to find a clean workspace, free from clutter. I then visually inspected the computer to give me a good understanding of how to carry out the upgrade. From visual inspection, I could see that there was a little bit of dust build up.

**Commented [AT4]:** K8, S5, S6, B2 Identifies and applies methods of communication, selecting technical and/or nontechnical language in reflection of the audience to inform progress and escalation and develop and maintain effective working relationships with them'.

**Commented [AT5]:** K14 Defines the principles of operating systems and describes the architecture of hardware systems and devices.

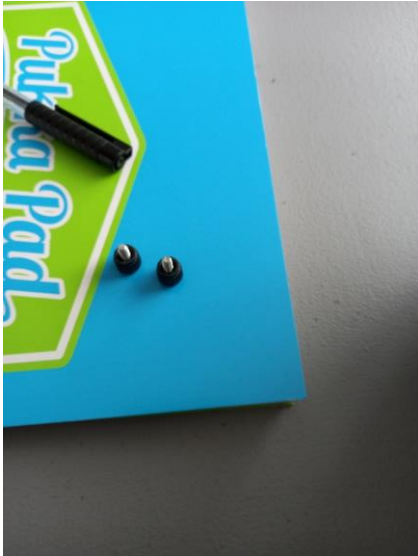
**Commented [AT6]:** K13 Outlines how they have a basic awareness of legislation in relation to disposal of waste materials for example Waste Electronic and Electrical regulations.



I then turned the computer onto its side and removed the two screws that attached the side of the case. I used the Phillips screwdriver to do this and turned the screwdriver left to remove the screws.



I put the screws somewhere where I would be able to find them easily again.



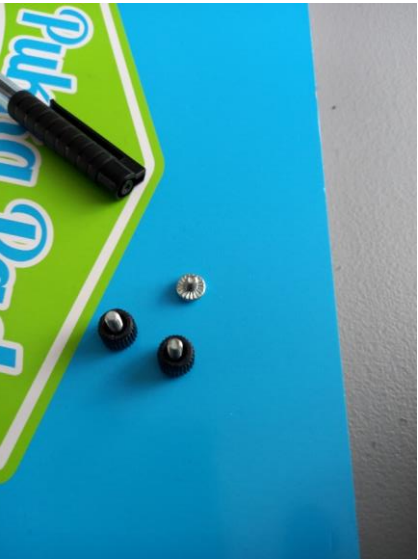
Once I opened the computer, I could see better what I was working with. As you can see from the picture below, there is further dust build up on the inside.



I located the graphics card and removed the one screw holding this in place. Again, I used a Phillips screwdriver and turned left to remove the screw. I then pinched the end of the graphics card interface slot and carefully removed the old graphics card.



Again, I put the screw somewhere safe.



I also put the old graphics card somewhere safe. In this instance, I put it on top of the side of the computer, as I know this is a static free environment.

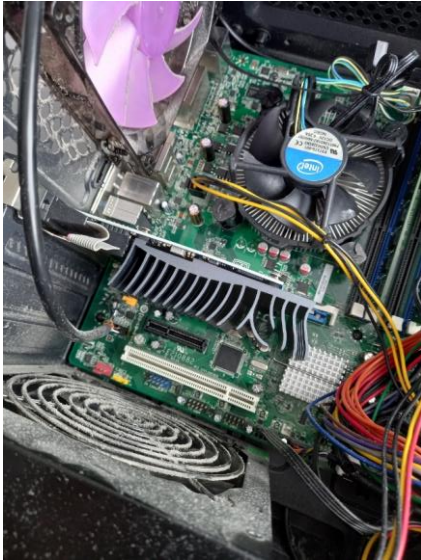




I then removed the newer graphics card from its protective packaging.



I then inserted the new graphics card by reversing the steps to remove it.

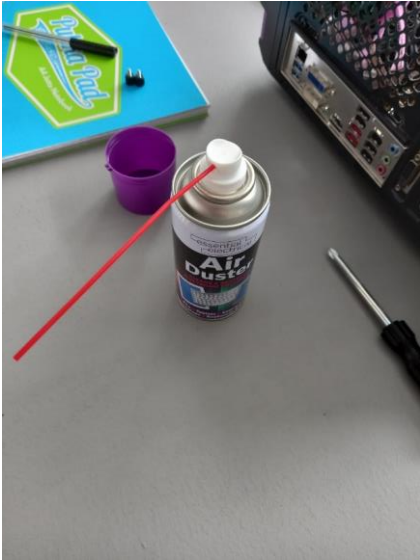


Here you can see me putting the screw back in. This time, I used the Phillips screwdriver to turn right.



Although not specifically requested, I used a tin of compressed air and some suction, to give the computer a quick clean. I think this is good practice and I do this with other similar jobs. This can prevent the computer getting hot in the future. I believe it is ethical to do this, as I know that further build up would likely cause issues.

**Commented [AT7]:** K9 Describes different types of maintenance and preventative measures to reduce the incidence of faults.



For this, I put on some eye protection and a dust mask. This is to prevent myself from dust exposure, which can lead to health problems. To use the compressed air, I held this upright and used short sprays. In between sprays, I used suction to remove larger clumps of dust.

As you can see from the image below, the computer is cleaner.



I then transferred the old graphics card to the packaging that the newer one arrived in. This was then put in our WEEE area, as directed by the customer.

**Commented [AT8]:** K10, S4 Explains how they ensure that they operate safely and securely across platforms and responsibilities applying the key principles of security including the role of People, Product and Process in secure systems.

^^ Health and Safety in terms of "operating safely".



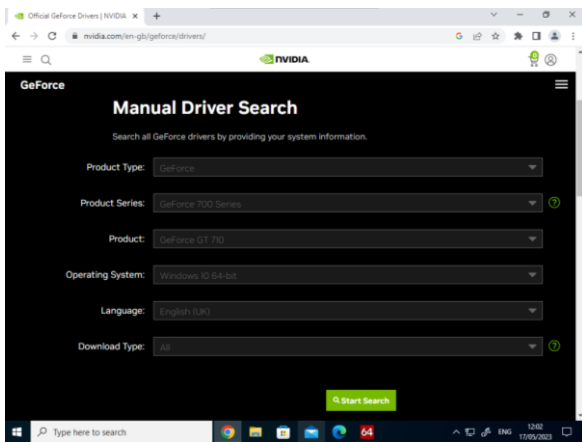
At this point, I also updated the WEEE spreadsheet, ready for when the items are collected.

	A	B	C	D	E	F	G	H
1	Component	Quantity	Description	Condition	Collected			
2	Graphics Card		5 NVIDIA GTX 1080	Good	Yes			
3	CPU		10 Intel Core i7-8700K	Fair	Yes			
4	Motherboard		8 ASUS ROG Strix Z390-E Gaming	Good	Yes			
5	RAM (GB)		20 Corsair Vengeance LPX 8GB DDR4	Good	Yes			
6	Hard Drive		15 Seagate Barracuda 2TB	Good	Yes			
7	Power Supply		12 EVGA SuperNOVA 750 G3	Fair	Yes			
8	Cooling Fan		25 Cooler Master Hyper 212 Evo	Good	Yes			
9	Optical Drive		3 LG Electronics Internal DVD	Fair	Yes			
10	Case		7 NZXT H510	Good	Yes			
11	Cables		50 Various types	Good	Yes			
12	Graphics card		1 A11 320	Good	No			

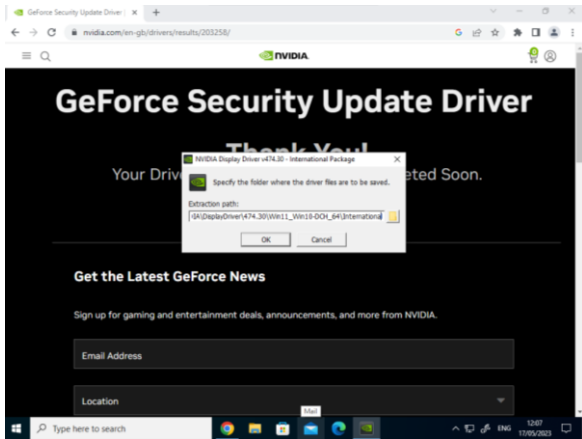
I then gave the computer a general wipe down and removed some dust that was still remaining near the front fan.



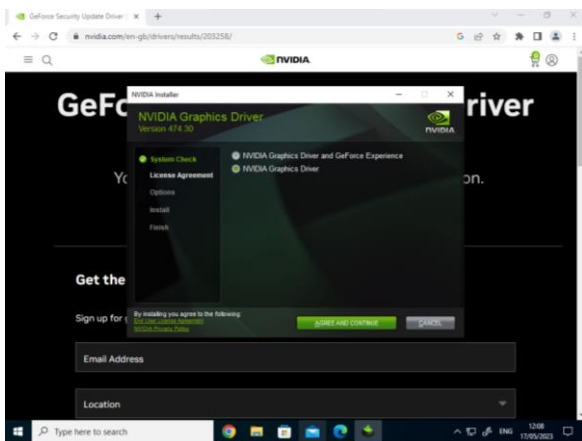
Once I completed the hardware upgrade, I then needed to install the drivers. To do this, I powered up the machine and logged in using the credentials provided by the customer. I then navigated to the Nvidia website, where I inputted the details of the card.



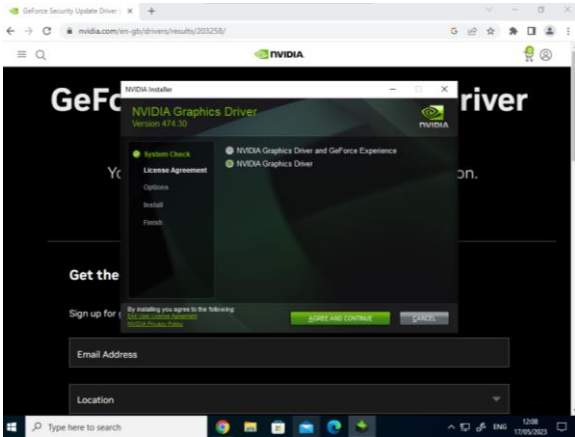
I then proceeded to install the drivers, using the Nvidia wizard.



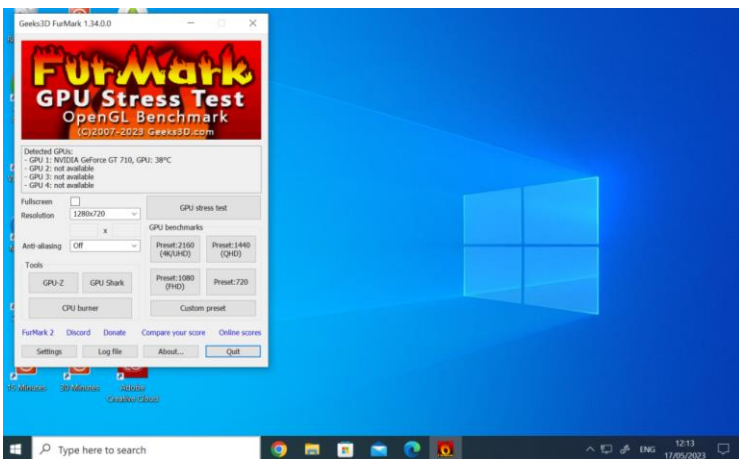
The computer didn't have much storage, so I opted for driver only and I did a custom install.



As you can see from the image below, the graphics card was now installing.



After I installed the graphics card, I used FurMark to stress test the graphics card. I used the 720 preset to do this.



The test then run through as seen below:

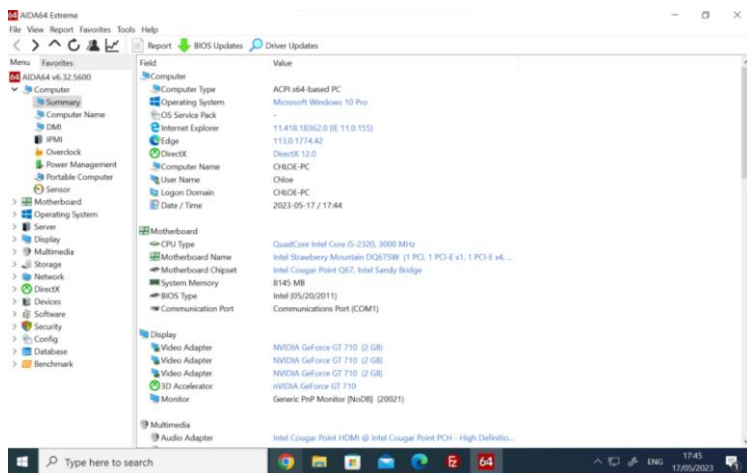
**Commented [AT9]:** K19 Explains the principles of Test Plans by reference to their role and significance.



The test was successful.

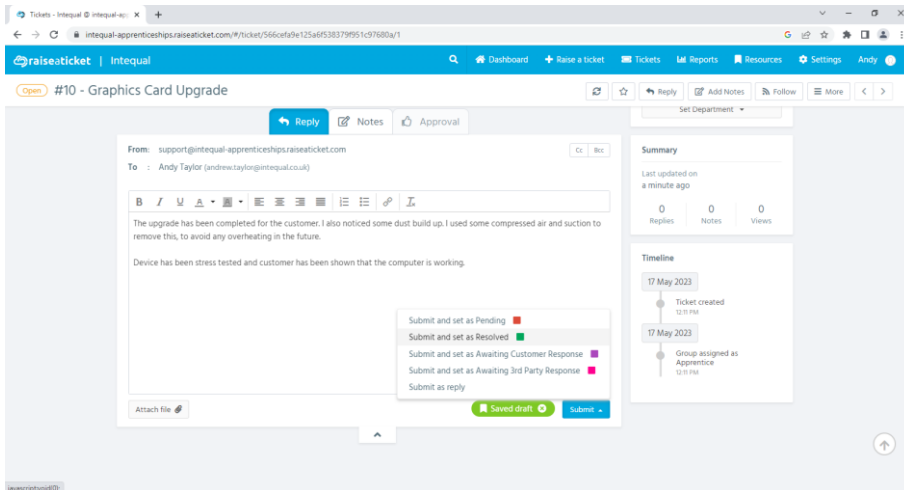
## Result

The outcome was that the graphics card was installed correctly, to a good standard. The installation of the drivers also went well. Finally, the stress test went well, as the temperature kept relatively low for the cooling mechanisms that were present. I showed the customer that the card was installed correctly. He then proceeded to give me positive feedback for the job and paid in full. Below is a screenshot of the updated system, with the new card installed:



The final job for me to do was to update the ticket as resolved, with some additional notes:





## Reflection

In terms of the actual replacement of the graphics card, I think I did this to the right standard. I didn't really need to use a Phillips screwdriver for the case screws, as these could have been removed by hand. However, as I had the screwdriver – I used it anyway. The compressed air I used was the right tool for the job, but there are bench tools that exist that do a similar job.

The driver update was done directly through Nvidia, but I could have scheduled Windows Update to run instead. This may have resulted in a less recent driver being applied. There are also third party software that can be used, but often this contains Adware, Spyware or Bloatware.

There are many tools that I could have used to conduct the stress test. For example, I could have used 3DMark, Unigine Heaven, AIDA64, Prime95. These are all valid tools, but I prefer the simplicity of FurMark and that is why it was used.

I believe my interaction with the customer was good. I met their expectations and this resulted in good feedback. If I were to do the job again, I would likely follow the same steps.

**Commented [AT10]:** S2 Critically analyses their use of tools and techniques to undertake tasks such as installation, maintenance or fault rectification.