

# [Test various pieces of hardware english language essay](https://assignbuster.com/test-various-pieces-of-hardware-english-language-essay/)

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Hardware TestingToday Martyn had given me a task to test various pieces of hardware that have been stripped from Dell OptiPlex GX260 minis from the day before. I was asked to complete this job because these pieces of hardware are being sent into the technician room to be used as spares. Any un-useable hardware would be disposed of in accordance to the Environmental Protection Act 1990 and also The Waste Electrical and Electronic Equipment Directive 2006. Alongside following these regulations I filled out a log sheet of the Hardware both working and faulty that would be handed to Martyn. This log sheet will have all the serial numbers, model numbers and specifications of the hardware ready to be disposed and of any hardware ready to be re-used so that the technicians can update their stock list Spreadsheet and their waste Spreadsheet. When an item is declared as waste in Achievement Training its details are recorded and it is put into a cardboard box. When the box is full, Dan Williams the operations manager then arranges for a third party company to come and collect the box and replace it with an empty one. As an ICT trainee technician at Achievement Training my main responsibility is to provide a high level of service to the students and staff that attend this collage. As a trainee I do not have access to any usernames and passwords alongside this I am not allowed to access the servers. The tech room is secure by a magnetic metal door that utilizes an electronic lock, only members of the ICT staff have a key fob that allows access. If someone wanted to gain access they would have to ring the bell that is located next to the door. Alongside the electronic lock the door is covered by a security camera that gives Dan Williams a view of the door. So he is able to see who requires access. Before I could start with the testing I went to the tech room to pick up a GX260 mini to perform these hardware tests upon. I got these test machines for the reason to minimalize the disruption to the class and to prevent any damage being caused to the classroom machines, by using an external computer instead of a fully set up computer means I can leave the Gx260 open for people to use in the next group. While acquiring these computers I abided by the manual handing regulations 1992, when lifting the machines I made sure that I used my thigh and buttock muscles, keeping my back straight and bending my knees also I needed to transport computers multiple times between certain points but because of learners in the next class I couldn’t use a trolley as this would disrupt them, so I made sure that each time a trip was made that the corridor was clear before moving the computers I did this by making sure that any boxes, lose cables or trollies were out of the way, providing a safe passage to and from my work station. Before I was able to begin the test I had to clear my work station and make sure they were no trip hazards. By doing this I am abiding by the Health & Safety at work act 1974, this will also prevent any damage occurring to any machine that I work on. Before starting any work I asked Martyn if any data on the test machine needed to be backed up, Martyn said to me that the hard-drive that was in the test machine had a fresh install of MS Windows XP with all the drivers, so that if any data was to become corrupt it could be easily replaced. If data did need to be backed up I could take an image of the hard drive and if any data needed to be restored I could restore this image using the image server located in the technicians room So once I knew this information I asked if I was allowed to start my work, Martyn give me all the permission I needed to begin my work. By using a test machine I am able to compete all necessary tests without disturbing any learners or members of staff, this is because I would be out of the way and all the computers would still be available for use therefore minimalizing service disruption. Once I had my test machine I had to perform a test on all the systems hardware, to make sure that the computer was working appropriately before adding any other hardware. I started off by performing a visual check of the internal components of the computer, I was looking for any damage to hardware or anything unplugged. Once the visual inspection was complete and I was happy with the way things looked inside the machine, I connected all relevant peripherals and I powered on the computer to see if it would POST and go into MS Windows. When it had past POST it then booted into MS windows, while I was in MS Windows I checked to see if the computer was picking up all the hardware that is installed by using device manager, and my computer properties. Once I was happy that all the default hardware was being picked up I restarted my machine and inserted my PC check floppy disk. Once the computer was restarted I hit F12 it access the boot menu. From here I was able to boot my computer into PC check by selecting to boot from diskette drive, and perform some tests on the default hardware. The test I choose to run were a burn in test on the entire system. I did this by selecting immediate burn-in test. Once I was in the burn in test tool I needed to configure the test to what I needed it to do. Two things I needed to configure were what I needed to test and the duration of the burn in test. This test would work all the internal components to test if they failed under high load, this would give me a more accurate indication of the performance of the machine so that I could compare to the expected performance. I configured the burn in test to run for a 30 minute duration by selecting " change options" while in the burn in test program and them I was able to select " change duration". The format of the duration was 01: 00 by default; this indicates a 1 hour long burn in. This duration would take too long since I had complete the tests within a reasonable time frame so I choose to run the tests for a 00: 30 minute duration. Once I was happy with the configuration I had to go back into the main menu of the burn-in test. Now that the duration was set I had to make sure that I selected the correct hardware I needed to test. The way I would select the test is by using the arrow keys to navigate to the correct hardware. Once I got to the correct heading I hit the enter key, by doing this it opened the sub-categories for example if I selected " Processors" it would open to extra sub-categories which are " core" and " MMX extensions". From here I was able to fine tune what to test, I could select " Y" for yes or " N" for no depending if I wanted to test it that far. Once all the settings were configured I saved the settings and made my way back to the main menu and selected " perform burn-in tests". While performing this test the computer shut down on its own. Upon re-booting the computer I was informed of a thermal event occurring. With this information I was able to attempt replicate this thermal event so I could be 100% sure it was an overheating problem by again booting into PC Check and repeating the burn in test. So once I knew the issue I re-opened the computer case to double check to see if the fan was plugged in and working. Now that I was happy the fan was working, knowing that the computer was overheating I took caution when touching the heat sink. I gave it a light tap to check the temperature of the heat sink and fan; it was warm to the touch so I decided to give it 5-10 minutes to cool off so I could check the thermal compound. Once the heat sink and fan were nice and cool I removed the current fan and heat sink carefully by releasing the lever arch locking mechanism so I was able to inspect the thermal compound. The thermal compound wasn’t providing a good enough seal for the heat to transfer to the heat sink. I Informed Martyn that this error has occurred because as a work placement I have to escalate any issues that I have. I advised Martyn that the best possible solution would be to use a different heat sink, fitted with a thermal pad, which was stripped from some of the other GX260 minis. This was because if I were to use the thermal paste I would need to remove and re-apply the paste every time I placed a new CPU (Central Processing Unit) into the mother bored socket. So with a thermal pad I would be saving time, resources and I wouldn’t be making a mess with any lose thermal paste and also the thermal pad was fitted by the manufacture and would fit their specifications. Now that I had a new heat sink and fan with a thermal pad attached I had to re-place in back onto the motherboard by placing it just above the socket and pushing down the lever mechanism and securing the heat sink in place. Now that the heat sink was attached safely and securely I proceeded to power my computer up and booted into PC check. Once I was in pc check I resumed the stress test I was preforming before the thermal event. This is because I want to be sure that this issue was resolved. Should any test on my hardware fail I would need to analyse the reason to why it has failed. Most if not all diagnostic software and testing tools have some way to tell me what the reason it has failed. It could be an error code or a series of beeps from the POST. With the information I receive upon a failed test I would do some research on the code or whatever I was given. With the information from researching I could relay back to Martyn why that particular hardware did fail. With hard drives and most hardware they are labelled to be of a certain size and speed known as the specifications. While testing I was looking to see if the testing software was detecting it as the correct size and speed just in case the hardware was running below the specifications. If this was to occur I would report this issue to MartynThe first piece of hardware I needed to test was 2x sticks of DDR 266 MHz 256MB Samsung RAM (Random access memory). The serial numbers for the two sticks were identical, and the serial number is M368L3223ETN-CBO. Before installing these sticks of RAM I performed a visual check to make sure that the sticks were in good condition and recorded the information onto a test log. Once I was happy with the way they looked I proceeded to install one stick into a DIMM (Duel in-line memory module) slot while keeping the other stick on an Anti-static mat to make sure the second stick was safe from any electro discharge damage, I also made sure that I was grounded at all times by using an anti-static wrist band. I did this because I have to abide by the ESD (Electro Static Discharge) regulations of the company. I tested these sticks separately, to avoid being confused if the computer refused to boot. This is because if I was to use both sticks together and it did fail to boot I wouldn’t know which stick it was or it could even be a DIMM slot. So by doing them separately I am able to isolate which stick could have an issue. I booted the computer up to check the BIOS (Basic In-put/ Out-put System) I checked the BIOS to see if the computer had recognised the hardware. I also used POST (Power on Self-Test) to give me a series of beeps. I was given a single Beep which indicates no problem and the computer continued to boot into MS Windows. Now that I was happy that the computer would boot into MS Windows without any problems, I restarted the computer and booted by using the boot menu and selecting " boot from diskette drive". Once I was in PC check I selected a stress test which I would configure to be a 30minuite long test to allow ampule time for the RAM to be efficiently tested. During this test I monitored the RAM looking for any issues. Now the test was complete I wanted to do one more test on this RAM so I could be happy with all the results. I choose to perform a liner and random sector test on the RAM. This test was used because I wanted to see if the RAM would access its sectors randomly and in a liner fashion without problems. I set this test to run for 5miniutes and I kept a close eye on the test to look out for any problems. After I preformed these two tests I reviewed the result and I was happy that it was an overall pass. Now that the first stick was complete and I was happy with the outcome I proceeded to repeat all the steps on the second stick. After the RAM was complete I moved onto testing a Western Digital 20GB with the speed of 7200RPMthe model number is -WD200EB-75CPFOthe serial number is -WMAAU5230194Like the RAM I performed a visual inspection of the Hard-Drive to see if any of the IDE (Integrated Drive Electronics) pins were damaged also to check to see if the drive had the correct jumper settings. Once I was happy with the visual inspection I asked Martyn if I needed to prepare a back-up of the drive, just in case something was to go wrong. I was told not to worry and continue with the job at hand. By asking about performing data back-up I am abiding by the Data protection act 1998. Now I was ready to install the Hard-Drive carefully while abiding by all necessary regulations. I wouldn’t need to undo any screws or use any tools, the computer is set up to allow easy access for removing and adding hardware by using a system of sliding rails to allow the Hard-Drive to just slide out and back into place. With the default Hard-Drive I placed on an anti-static mat to makes sure it avoided any damage. Once I replaced the Hard-Drives I re-connected all the cables and proceeded to booting into MS Windows. Before I ran any diagnostic software I attempted to boot into MS Windows, I checked the BIOS to see if the HDD (Hard Disk Drive) was being recognised, and to see is it could pass the POST. I had no issues with BIOS or POST. Now I let the HDD boot into MS Windows, the drive wouldn’t boot, it came up with as " missing NTLDR" which means it needs a fresh install of MS Windows. I found out about what " NTDLR" meant by doing some research on a working computer and searching for " What is a NTDLR error" into my chosen search engine, so this is why I was able to diagnose it as in need of a new install of MS Windows. After I established this issue I still needed to check to see if all the internal parts of the HDD were working at its best, also to see if the Hard-Drive had any bad sectors. So I proceeded to reboot the computer so I could boot into my PC check. Now that I was in PC check I selected to run a few test to make sure this drive would still be able to be used as a spare. I started off by running a test that would test the internal drive mechanics of the Hard-Drive. This is because I wanted to see if the internal components of the Hard-Drive were in good condition just in case the drive was dropped. Once I was happy that the internal components of the Hard-Drive were at a stable working condition I moved onto performing a test on the sectors of the drive. I ran a Non-destructive read test on all sectors of this drive to look for any bad sectors. This test ran for about 45minutes, this is because it was doing a deep scan of the Hard-Drives storage space looking for any damaged or corrupt sectors. This test came back as a clean drive without any bad sectors. I am happy for this drive to be re-used. If this drive did show up a bad sector I would have asked for advice on what to do next. My manager would make the final decision on what to do with the faulty drive. Luckily I did not have this issues, the only issue was the NTLDR errorNow that the hard-drive and RAM were tested and ready for re-use I proceeded to test a few CPU’s to check to see if they were able to be re-used. These CPU’s had separate Serial numbers1. T324B60906682. 6320A935004203. 7318A089-0767like the other pieces of hardware I started off by performing a visual inspection of the CPU’s. By doing this I am checking for any damage to the CPU like bent pins or any other visible damage. Once I was happy with my visible inspection I had to install each CPU one after the other. I did this by carefully removing the heat sink and fan from the CPU socket. I did this by lifting up the latch lever and carefully lifting the heat sink away from the socket to avoid any damage. Once the heat sink was placed safely out of the way I proceeded to remove the stock CPU that was in to begin with. By loosening the lever on the CPU socket I was able to remove and place the stock hardware onto my anti-static mat, which in turn allowed me to insert the hardware that needed the testing. Once I had installed the CPU I powered on the computer to allow it to POST. If the computer didn't POST I would know that the CPU was faulty. I would know this because without a CPU a computer will not be able to process the POST. If it was able to POST I would continue to let it boot into MS Windows. Once I was in MS Windows I went into device manager by right clicking on " my computer" and clicking " manage". Once I was happy with the results of the booting sequence, I restarted the computer so I could boot into my PC check. While in PC check I selected to perform a basic logical test on all the CPUs. The basic logical test is a test that makes to CPU process random packets of data to test the speed and stability of the core. Once this test was complete and it came up saying that the CPU has passed the test. With the information I gained from the passed test I needed to analyse the information and compare it to the specs of the CPU I had written down just in case the CPU had a lower speed then the specification. Now that I was happy with the first test, I performed a 30minute stress so I could monitor the CPU while under stress. I did this because I wanted to see if this CPU was able to handle the stress of a per-longed use. During the 30minutes I carefully monitored the CPU performance so I could be confidante that the CPU is fit and ready to be re-used. I repeated the previous steps on how to remove and replace the CPU. I also repeated the same tests on the other two CPUs. So with this information on all 3 CPUs I am happy with these to be re-used at a later date. Once the final test was completed and I was happy with the results, I finalized my log sheet and double check all the details against the hardware. Now that I was complete I restored my GX260 mini back to its original state, this is to make sure that if it needs to be used again it is ready a working like when I collected it. I also cleared up my work station making sure any lose cables were put away to avoid trips and the bench was clear and ready to be used for a new purpose. Once I had completed my tidying up I took the log sheet with all hardware to the technician room. I proceeded to transport all the hardware to the back room, making sure I follow the Manual Handling regulations 1992. The hardware I tested had passed all the required tests so now it can be ready to be re-used. Once I arrived at the tech room I handed Martyn the log sheet so he was able to input all the details of the hardware into his stock level Spreadsheet and informed him that the job had been completed. During this task my use of tools was not needed due to the design of the computers case. Components within the computer were on a rail system, so I had no need to use a screwdriver to remove and screws. If the computer did require me to use certain tools like a screwdriver I would make sure to take care when removing the screws to avoid damaging any of the components or case. The reason I aided the diagnostic process is to identify what is faulty or shorten the list of what could be causing the issue, by doing this I am able to focus on a shortlist of potential causes of the issue. I used a technique called substitution to try and replicate the fault in a different machine, by substituting the faulty CPU into another known working machine I can see if it’s the CPU or the machine that is causing the fault. This process can also be used in " what if" scenarios as in " what if I try this CPU in another machine" With my test machines I expect certain things, such as the speed of the computer when booting into windows and opening and closing applications. This is because with the all hardware it comes with certain specifications and we want our machines to be running at these specifications that the manufacturer supplies with the hardware. I expect my test machines to boot into windows within about 2-3 minutes, if this process was to take longer than my expected time I would then look into potential causes. By doing this I am comparing my expected performance with the actual performance of the computer and making a judgement on what to do. By testing the performance of my machines before I perform any testing or maintenance, I am able to assure that my computer run certain programs and test my hardware at a reasonable speed. Also I test my machine to see if any of my default hardware is causing issues to avoid confusion when testing my core hardware.