ID	Diagnostic Routes	Descriptions
P	**Power-On Self-Test Failure**	The PC is unable to boot due to a failed POST
D	**No Display Output**	The PC cannot output any display to the attached monitor(s).
L	**Device Performance Lagging**	The PC opens but is slow and laggy, sometime to the point of crashing.

Table 1: The four main routes will assist the Expert System in following the correct path.

Question	Answer	Confidence Points
What is the MHz speed of your RAM?	2133 >= X	1.5
	2133 < X <= 2666	2.5
	2666 < X < 4000	3.5
	4000 <= X	4.5
How many GBs of RAM do you have?	8 < X	1.0
	8 <= X <= 16	2.0
	16 < X < 32	3.0
	32 <= X	4.0
How many GHz is your CPU?	2.40 >= X	1.5
	2.40 <= X < 3.50	2.5
	3.50 <= X < 4.00	3.5
	4.00 <= X	4.5
How many cores does your CPU have?	4 or Under	1.0
	6	2.0
	8 or More	3.0

Table 2: Pointing system based on user response.

Rating	RAM	CPU
Worst	1.5*1.0 = **1.5**	1.5*1.0 = **1.5**
Average	3.5*2.0 = **7.0**	3.5*2.0 = **7.0**
Best	4.5*4.0 = **18**	4.5*3.0 = **13.5**

Table 3: Confidence rating for worst, average, and best, for RAM and CPU

ID	Advice and Instructions
GA1	Try to reset the BIOS by reseating the CMOS battery.
GA2	Test every stick of RAM you have by placing each in different slots.
GA3	Update any and all software, whether this is the BIOS, the OS, the drivers, ect. Reinstall if possible.
PA1	Plug the PC into an outlet and make sure the power button on the power supply is switched on.
PA2	Try a different wall outlet.
PA3	Try a different IEC C13 Power Cable to connect to the outlet, ensure that it is similar to the original as much as possible.
PA4	Make sure the front panel connectors are connected to the motherboard correctly.
PA5	Disconnect all peripherals.
PA6	Reconnect each peripheral one by one until the system fails to boot.
PA7	Only connect the power cables for the CPU and Motherboard, ensure they are properly connected.
PA8	Reconnect each of the previously disconnected cables to their respective hardware and check if the PC opens with each new connection.
PA9	Unplug the old power supply along with all its cables and use the replacement one with all its cables.
DA1	Make sure the monitor is plugged in.
DA2	Try a different cable from the PC to the monitor.
DA3	Replace your current monitor with a different monitor.
DA4	Plug the monitor into the iGPU.
DA5	Connect the cable to the dGPU.
DA6	Install the spare GPU into the system.
LA1	Replace the OS Hard Disk Drive with a Solid State Drive.
LA2	Run an antivirus and antimalware check on the device.
LA3	Enable XMP profiles on the RAM in the BIOS.
LA4	Disabled XMP profiles on the RAM in the BIOS.
LA5	Switch to using Dual/Quad Channel memory.
LA6	Replace the thermal paste on the CPU.
LA7	Replace any fans.

Table 4: The different Instructions and Repairs the user could apply to their PC to help solve the issue.

Table 5: The End Cases the Expert System can reach as a complete diagnostic.

ID	End Cases	Descriptions
BC	**Best Case**	No issues that the Expert System is designed to help with. Suggest that if the user is still experiencing an issue, go to an outside source, such as a PC Repair Shop, for further help.
WC	**Worst Case**	The Expert System cannot reach a suitable diagnosis with the information provided. Multiple parts of the PC may be at fault here. Suggest going to an outside source, such as a PC Repair Shop, for further help.
GC1	**BIOS Reset Required**	By taking out the CMOS battery, the BIOS is reset back to the default configuration.
GC2	**Faulty RAM Module/Slot**	One or more RAM sticks or RAM slots on the motherboard are faulty. The user needs to test each slot and each stick individually to confirm which specific stick/slot is causing the issue. It is recommended to replace the faulty stick or motherboard.
GC3	**Out-Of-Date Software**	At least one computer software was out of date and required an urgent update and/or reinstall to fix the issue, this could be the BIOS, the OS, drivers, or more.
PC1	**Unplugged Power Outlet**	The device was not plugged into an outlet. User should plug their PC into an outlet.
PC2	**Faulty Power Outlet**	There is a possibility that the wall outlet the user has plugged the pc in is faulty. Try a different wall outlet.
PC3	**Faulty Power Cable**	The cable the user is using to connect the PC to the wall outlet could be faulty.
PC4	**Disconnected Front Panel Connectors**	Front panel connectors were not connected, or not corrected correctly. Use should connect the PWR connectors to the appropriate pins on the motherboard to ensure the power button works.
PC5	**Error Codes**	The user should check the error code or beeping code using the motherboard manual to figure out the issue from there.
PC6	**Burnt Power Supply**	Stop using the PC immediately. Try to disable all the power cables from the components. Go to an experienced technician to dispose of the power supply and salvage any usable parts.
PC7	**Faulty Hardware**	One or more of the peripherals/hardware components connected to the PC are faulty. The user needs to test each peripheral/hardware component individually to confirm which specific component is causing the issue. It is recommended to replace the faulty component.
PC8	**Faulty PSU**	The users main power supply is faulty.

PC9	**Faulty Motherboard/CPU**	It is possible that either the motherboard or the CPU have a fault preventing a startup. Suggest going to a technician.
DC1	**Monitor was Unplugged**	Either the monitor was not switched on, powered on, or fully connected to the PC.
DC2	**Faulty Monitor Cable**	There is an issue with the cable the user uses to output from their PC to their monitor. Requires replacement.
DC3	**Faulty Monitor**	There is an issue with the monitor the user uses to display the PC output. If the monitor has more than one display input slot, they should test the display with these slots. If that does not help, then a new monitor is required.
DC4	**Faulty dGPU**	The Discrete Graphics Card is faulty and does not output a display signal correctly. If the dGPU has more than one display output slot, they should test each one. If that does not help, then a new dGPU is required.
DC5	**Unutilized dGPU**	The user has a Discrete Graphics Card in their system, but instead, had connected the monitor cable directly to the motherboard, using the Integrated Graphics Card instead. The user could either believe their CPU has an iGPU or the iGPU is faulty. Simply connect the cable to the dGPU to fix the issue.
DC6	**Faulty iGPU**	One of three possible cases. The iGPU inside the CPU is faulty, the display output slot on the motherboard is broken, or the user mistakenly thinks their CPU has an iGPU. It will require further testing to determine the issue. Suggested to take to a PC repair shop to assist further.
LC1	**Replace HDD**	Replace the OS drive using an HDD with an SSD. SDDs are faster and more reliable than HDDs. Significantly increasing performance of the system.
LC2	**Malicious Program**	User's device was infected with malicious programs leading to a slow computer.
LC3	**XMP Disabled**	The user should check if their RAM supports XMP to allow the RAM to speed up to its overclocked speed.
LC4	**XMP Enabled**	XMP profiles are used to increase the speed of the RAM. This is done by increasing the voltage and clock speed of the RAM. This can lead to instability in the system. Turning it off helped fix the issue.
LC5	**Incorrect Memory Channel**	User should switch to using Dual Channel or Quad Channel doubles/quadruples the bandwidth and drastically decreases memory latency.

LC6	**Weak RAM**	The user's RAM is struggling to keep up with the rest of the components. The user should try to upgrade to faster MHz and/or higher capacity RAM.
LC7	**Weak CPU**	The user's CPU is struggling to keep up with the rest of the components. The user should try to upgrade to faster GHz and/or higher core count CPU.
LC8	**Old Thermal Paste**	CPU was overheating due to old thermal paste. Thermal paste needed to be reapplied.
LC9	**Broken Fan**	At least one fan was broken and needs replacement.
LC10	**Broken Cooler**	The cooler the user is using is broken and needs to be replaced.