



Computer System Failure Modes and Effects

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*Review: A Failure

Chapter 2 explains it as a situation in which an action does not give the desired results.

Life Examples:



List of Computer Failures

- * Hardware

- * Software

- * Systematic

 - I. Personnel error

 - II. Design inadequacies

 - III. Environmental conditions

 - IV. Procedural deficiencies

A problem has been detected and windows has been shut down to prevent damage to your computer.

DRIVER_IRQL_NOT_LESS_OR_EQUAL

If this is the first time you've seen this Stop error screen, restart your computer. If this screen appears again, follow these steps:

Check to make sure any new hardware or software is properly installed. If this is a new installation, ask your hardware or software manufacturer for any windows updates you might need.

If problems continue, disable or remove any newly installed hardware or software. Disable BIOS memory options such as caching or shadowing. If you need to use Safe Mode to remove or disable components, restart your computer, press F8 to select Advanced Startup options, and then select Safe Mode.

Technical information:

*** STOP: 0x000000D1 (0x0000000C,0x00000002,0x00000000,0xF86B5A89)

*** gv3.sys - Address F86B5A89 base at F86B5000, DateStamp 3dd991eb

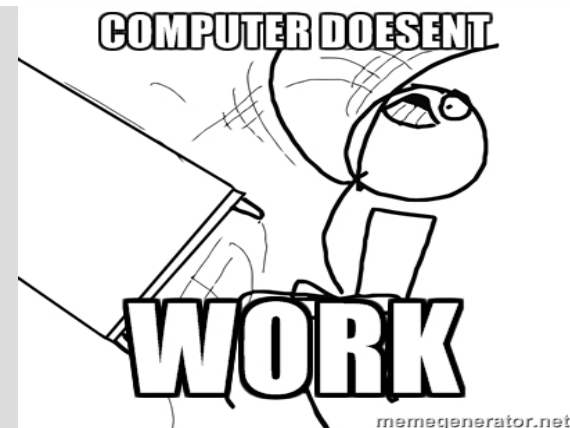
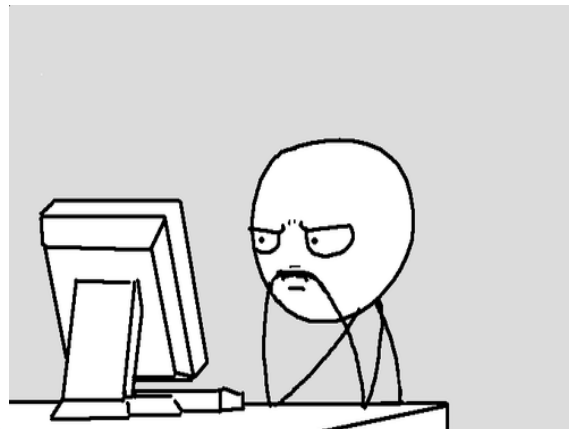
Beginning dump of physical memory

Physical memory dump complete.

Contact your system administrator or technical support group for further assistance.

Hardware and Software Failure

- * Hardware Failure results from any failure concerning the hardware
- * Software Failure results from any bugs or anomalies that would prevent the program properly



Systematic Failures

- * Personnel Errors occur through human interference.
- * Environment Conditions occur from the temperature, humidity, shock, vibration, or electromagnetic interferences that the computer is exposed to.



Systematic Failure

- * Design and Procedural Adequacies
 - I. Hardware: was not installed or built properly
 - II. Software: was not coded properly.
- * Both are classified as design faults

* Computer System Failure Mode

- * Application failures: Occurs when an application undergoes a failure resulting in an unplanned release of harmful energy.

- * The failures involve fires, explosions, excess radiation, etc.

* Determining Application Failure Modes

- * A safety-critical computer system design begins by learning and understanding all the ways that application can fail. This knowledge come from the following:
 - * End User: The group of people who take possession of the system at the end of the development cycle.
 - * Documentation: Operating logs, maintenance logs, and mishap reports.
 - * Formal safety analysis and reports

*Sensor Failures

- *Occurs when a incorrect signal is produced for a given stimulus.
- *Effectors and Transmitters are similar.

Sensor	Failure Modes
Current (AC) meter	Shorted. Open circuit. Degraded operation. (1)
Flow transducer	Minimum output. Maximum output. (2)
Flow transmitter	Minimum output. Maximum output. Constant. Erratic. Intermittent. (2)
Flow switch	Out of adjustment. Shorted. Clogged/clogging. No operation. (1) Spurious switch. Fail to switch. Switch at wrong level. Intermittent. (2)
Level (float) fwitch	Fail to switch. Spurious switch. Switch at wrong level. Intermittent. (2)
Level transducer	Minimum output. Maximum output. Constant. Erratic. (2)
Limit switch (micro switch)	Change in resistance. Open. Fail to switch. (1)
Photodetector	Open. Shorted. Degraded operation. (1)
Position gyroscope	Drift. Out of specification. Opened. Shorted. Binding/sticking. Spurious/false operation. Unstable operation. (1)
Potentiometer - (variable resistor)	Opened. Intermittent. Drift. Spurious/false operation. High contact resistance. Shorted. Mechanical failure. (1)
Power transducer	Minimum output. Maximum output. Erratic. (2)
Pressure transmitter	Minimum output. Maximum output. Constant. Erratic. Intermittent. (2)

Other Computer Systems

- * Data Communication Link :

 - Failure of receipt or transmission of data

 - Alteration of received or transmitted data

- * System Power/Interconnect

 - Bad wiring

 - incorrect voltage

 - battery not taking charge.

- * Operating System fail

 - procedural inadequacies.