Questions relating to project management

Resources and methods for learning about these subjects (list a few here, in preparation for your research):

Project progress report (1 day)

Date:

Description of progress made on this day

file 03995

Answer 1

Be sure to note *everything* accomplished for each day, so your instructor has a complete record of your progress.

Notes 1

The purpose of this report form is to familiarize students with the concept of time management as it relates to project completion. Too many students have a tendency to do little or nothing until just before their project is due. By assigning a grade value for progress made each day, you help them learn time management skills and also help them complete their projects sooner (and better!).

Project progress report (5 day)	
Date:	*Description of progress made on this day*
Date:	*Description of progress made on this day*
Date:	*Description of progress made on this day*
Date:	*Description of progress made on this day*
Date:	*Description of progress made on this day*

file 03111

Answer 2

Be sure to note *everything* accomplished for each day, so your instructor has a complete record of your progress.

Notes 2

The purpose of this report form is to familiarize students with the concept of time management as it relates to project completion. Too many students have a tendency to do little or nothing until just before their project is due. By assigning a grade value for progress made each day, you help them learn time management skills and also help them complete their projects sooner (and better!).

Project progress report (6 day)	
Date:	*Description of progress made on this day*
Date:	*Description of progress made on this day*
Date:	*Description of progress made on this day*
Date:	*Description of progress made on this day*
Date:	*Description of progress made on this day*
Date:	*Description of progress made on this day*

file 03112

Answer 3

Be sure to note *everything* accomplished for each day, so your instructor has a complete record of your progress.

Notes 3

The purpose of this report form is to familiarize students with the concept of time management as it relates to project completion. Too many students have a tendency to do little or nothing until just before their project is due. By assigning a grade value for progress made each day, you help them learn time management skills and also help them complete their projects sooner (and better!).

Preliminary project schematic
Draw a schematic diagram (as complete as possible), for the project you intend to build. Make note of any portions of the design where you feel unsure or need assistance.

file 04030

Answer 4

Check with your instructor to see whether or not your design looks viable.

Notes 4

The purpose of this form is to get students thinking in more concrete terms about what they intend to build. Too often, students begin assembling a prototype without a clear idea of what their circuit should look like. Once students have documented their rough ideas, the instructor may provide more targeted help to each student or team of students before they begin assembly.

Question 5

NAME: _____ **Project Grading Criteria** PROJECT: _____

You will receive the highest score for which *all* criteria are met.

100 % *(Must meet or exceed all criteria listed)*

A. Impeccable craftsmanship, comparable to that of a professional assembly
B. No spelling or grammatical errors anywhere in *any* document, upon first submission to instructor

95 % *(Must meet or exceed these criteria in addition to all criteria for 90% and below)*

A. Technical explanation sufficiently detailed to teach from, inclusive of every component (supersedes 75.B)
B. Itemized parts list complete with part numbers, manufacturers, and (equivalent) prices for *all* components, including recycled components and parts kit components (supersedes 90.A)

90 % *(Must meet or exceed these criteria in addition to all criteria for 85% and below)*

A. Itemized parts list complete with prices of components purchased for the project, plus total price
B. No spelling or grammatical errors anywhere in *any* document upon final submission

85 % *(Must meet or exceed these criteria in addition to all criteria for 80% and below)*

A. "User's guide" to project function (in addition to 75.B)
B. Troubleshooting log describing all obstacles overcome during development and construction

80 % *(Must meet or exceed these criteria in addition to all criteria for 75% and below)*

A. All controls (switches, knobs, etc.) clearly and neatly labeled
B. All documentation created on computer, not hand-written (including the schematic diagram)

75 % *(Must meet or exceed these criteria in addition to all criteria for 70% and below)*

A. Stranded wire used wherever wires are subject to vibration or bending
B. Basic technical explanation of all major circuit sections
C. Deadline met for working prototype of circuit (Date/Time = _____ / _____)

70 % *(Must meet or exceed these criteria in addition to all criteria for 65%)*

A. All wire connections sound (solder joints, wire-wrap, terminal strips, and lugs are all connected properly)
B. No use of glue where a fastener would be more appropriate
C. Deadline met for submission of fully-functional project (Date/Time = _____ / _____) – supersedes 75.C if final project submitted by that (earlier) deadline

65 % *(Must meet or exceed these criteria in addition to all criteria for 60%)*

A. Project fully functional
B. All components securely fastened so nothing is "loose" inside the enclosure
C. Schematic diagram of circuit

60 % *(Must meet or exceed these criteria in addition to being safe and legal)*

A. Project minimally functional, with all components located inside an enclosure (if applicable)
B. Passes final safety inspection (proper case grounding, line power fusing, power cords strain-relieved)

0 % *(If any of the following conditions are true)*

A. Fails final safety inspection (improper grounding, fusing, and/or power cord strain relieving)
B. Intended project function poses a safety hazard
C. Project function violates any law, ordinance, or school policy

file 03173

Answer 5

Be sure you meet with your instructor if you have any questions about what is expected for your project!

Notes 5

The purpose of this assessment rubric is to act as a sort of "contract" between you (the instructor) and your student. This way, the expectations are all clearly known in advance, which goes a long way toward disarming problems later when it is time to grade.

Question 6

Identify the problem(s) with the following project construction and wiring practices, explaining how these practices could be improved upon, and why:

Wires cut as short as possible, stretched point-to-point:

Compression lugs crimped over solid wire:

Compression lugs crimped using ordinary pliers:

Bare wire ends clamped beneath nuts (or nuts and washers) on threaded studs:

Solid wires used in places where bending regularly occurs:

Signal and power wires bundled together:

Components anchored in place by glue rather than by removable fasteners:

file 03854

Answer 6

Wires cut as short as possible, stretched point-to-point:

When wires are strung in such a point-to-point fashion, several problems arise. First, they are more easily pulled loose from their connection points. Second, they tend to impede access to other components by occupying open space inside the enclosure rather than "hugging" flat surfaces. Third, short wire lengths place more stress on the wires and the connections when vibration occurs.

Compression lugs crimped over solid wire:

Solid, electrical-grade copper does not have enough elasticity to maintain proper tension against the barrel of a small compression-style lug. Over time, a solid wire will work itself loose from a such a lug. Stranded wire is the proper type of wire to use in this application.

Compression lugs crimped using ordinary pliers:

Special crimping pliers are designed to compress the barrel of the lug unevenly, so that the wire is securely held between ridges formed under the pressure of crimping. Regular pliers with their flat jaws are unable to produce these ridges in the barrel, leaving the wire much less secure.

Bare wire ends clamped beneath nuts (or nuts and washers) on threaded studs:

When any tension is placed on the wire, it will try to turn the nut. This is why lugs should always be crimped on to the end of a wire to attach that wire to a stud: the lug will not exert a torque on the holding nut.

Solid wires used in places where bending occurs:

Copper will harden if repeatedly stressed, leading to brittleness and fatigue. Solid wire does not bend easily, and will eventually break where it is forced to bend. Stranded wire is much more supple, and takes bending much better than solid wire.

Signal and power wires bundled together:

Close proximity between wires leads to inductive and capacitive coupling. When power and signal wires are placed together, the larger currents and voltages in the power conductors will likely couple unwanted noise into the signal wiring. As a rule, always separate power and signal wiring. If these wires must cross paths, do so at right angles to minimize coupling.

Components anchored in place by glue rather than by removable fasteners:

Glued components are much more difficult to replace than fastened components. Always build your projects with future maintenance in mind!

Notes 6

The purpose of this question is to introduce students to good wiring practices. By asking them to identify what is wrong with a set of improper practices, they are more likely to pay attention than if you simply tell them the right way to do things.

Troubleshooting log

Actions / Measurements / Observations (i.e. *What I did and/or noticed . . .*)	**Conclusions** (i.e. *What this tells me . . .*)

file 03933

Answer 7

I do not provide a grading rubric here, but elsewhere.

Notes 7

The idea of a troubleshooting log is three-fold. First, it gets students in the habit of documenting their troubleshooting procedure and thought process. This is a valuable habit to get into, as it translates to more efficient (and easier-followed) troubleshooting on the job. Second, it provides a way to document student steps for the assessment process, making your job as an instructor easier. Third, it reinforces the notion that each and every measurement or action should be followed by reflection (conclusion), making the troubleshooting process more efficient.

Question 8

NAME: _____ **Troubleshooting Grading Criteria**

You will receive the highest score for which *all* criteria are met.

100 % *(Must meet or exceed all criteria listed)*
A. Absolutely flawless procedure
B. No unnecessary actions or measurements taken

90 % *(Must meet or exceed these criteria in addition to all criteria for 85% and below)*
A. No reversals in procedure (i.e. changing mind without sufficient evidence)
B. Every single action, measurement, and relevant observation properly documented

80 % *(Must meet or exceed these criteria in addition to all criteria for 75% and below)*
A. No more than one unnecessary action or measurement
B. No false conclusions or conceptual errors
C. No missing conclusions (i.e. at least one documented conclusion for action / measurement / observation)

70 % *(Must meet or exceed these criteria in addition to all criteria for 65%)*
A. No more than one false conclusion or conceptual error
B. No more than one conclusion missing (i.e. an action, measurement, or relevant observation without a corresponding conclusion)

65 % *(Must meet or exceed these criteria in addition to all criteria for 60%)*
A. No more than two false conclusions or conceptual errors
B. No more than two unnecessary actions or measurements
C. No more than one undocumented action, measurement, or relevant observation
D. Proper use of all test equipment

60 % *(Must meet or exceed these criteria)*
A. Fault accurately identified
B. Safe procedures used at all times

50 % *(Only applicable where students performed significant development/design work – i.e. not a proven circuit provided with all component values)*
A. Working prototype circuit built and demonstrated

0 % *(If any of the following conditions are true)*
A. Unsafe procedure(s) used at any point

file 03932

Answer 8

Be sure to document all steps taken and conclusions made in your troubleshooting!

Notes 8

The purpose of this assessment rubric is to act as a sort of "contract" between you (the instructor) and your student. This way, the expectations are all clearly known in advance, which goes a long way toward disarming problems later when it is time to grade.