Student and Teacher Question and Answers

Multi-tool Badge Holder

1. I am writing to you both to inquire about the badges NASA will be using. specifically if these badges will be using magnetic strips or rfids. also if they are using rfids are those sensitive to magnets in any way. Thank you for your time. I can't, wait to hear back from you.

Our badges have both magnetic strips and ID chips. I think I would be very careful about having magnets close to the chip as well as the magnetic strip. If you are wanting to use a magnet for something close to the card, you may have to think about the spacing and the strength of the magnet.

2. I was wondering if there was a document anywhere or if you could send me one on what the judges will be looking for at the PDR?

I'm currently working on a rubric for each of the projects I will send them out or put them on the website in the very near future.

3. We are having difficulty formatting the badge holder to include a USB drive, which we think is the most important feature second to the ruler. Are the constraints set in stone, or can we go slightly beyond them?

I'm trying to keep the badge holder from growing too much and becoming a big shield. Unless there is something specific that is needed I'm going to keep the size dimensions the same. If we come across something that pushes it bigger, I'll consider.

Have you looked at removing the shell of your thumb drive? Many are much smaller than the exterior shell. You may be able to 3D print your badge holder to include the shell for the thumb drive.

4. For the IDs, what are the necessary items and tools that should be on the badge holder? Do tools like calipers, rulers, or pens have more use?

--We had a few other teams ask similar questions which I sent to my colleagues so I will add their the questions and their responses below which should help your team:

5. *What are some tools that you think would be most useful on an ID card multitool?*

   o *Ruler/straight-edge, reinforced edge for opening boxes, prying tool, flat/Phillips head screwdriver, wire strippers, scissors, hex head wrench*

6. *What are some tools that you wish you could have on you at all times, or use everyday?*

   o *Calipers, ruler, screw driver, scissors, utility knife/box cutter, wire stripper*

7. *What are some tools that you think would be most useful on an ID card multitool?*

Screw thread gage/sizing holes as shown in the slides, small ruler & protractor, I know a knife is probably not ok but maybe a small sharp edge like for opening packages?

Also I know swiss army knives sometimes have small screwdrivers, a few of those would be neat if possible too. Phillips at a minimum, but if you can have ¼-20 hex and flathead those would be nice.

8. *What are some tools that you wish you could have on you at all times, or use everyday?*

Ruler, protractor, sharp edge. Also like having the metal plate in there to block RF scanners

9. *What are some tools that you think would be most useful on an ID card multitool?* *Multiple pockets for other cards/badges. Side pocket or elastic holder for lip balm and/or pen/pencil. Screwdriver for glasses. Small shatterproof mirror. Strong flat edge to pry something open. And measurements along the edge (inches on one side, cm on the other).*

10. *What are some tools that you wish you could have on you at all times, or use everyday?* *Find my phone button.*

11. *What are some tools that you think would be most useful on an ID card multitool?*

small screwdriver, ruler, magnifying glass, pen, pencil, highlighter

12. *What are some tools that you wish you could have on you at all times, or use everyday?*

ruler, pen or pencil

13. Also, What are the most common problems with the original IDs? We want to create a badge holder that would be the most beneficial for your organization's use.

--Our current badge holder just holds a badge but that is all it was designed to do therefore, I am not sure I would say that is a problem. So we really cannot answer that questions as our badge holder was never designed to be a multi tool. Some of our badge holders can hold 1 badge and some can hold 2 badges.

14. Next, what type of bolts do you use the most at NASA? Do you guys use hex bolts, lag bolts, or any others? Or do you have a combination of many bolts?

-- The usage of bolts is dependent on the application. Therefore, we do have a large variety of hardware utilizing different type of bolts so I would suggest if you are using bolts, make sure you can explain why you are picking one design over another and research how and where different bolts are used.

15. If we add LED Lights for safety reasons, what color would be more effective at showing a warning? I look forward to hearing from you and please let me know if you have any questions or concerns.

--At NASA, using a red LED or red light means DANGER or something is a hazard so I would not recommend using red LED lights. The badge holder is for everyday use so I suggest doing some research to learn about how different colors are used in different situations and then pick a color and explain why you selected that color.

10/23/2023

16. We are on the decision-making process designing prototypes of the Badge Holder and had questions regarding the piece of aluminum backing that is required on the badge.

a. How thick does the piece of Aluminum need to be?

The aluminum with my badge seems to be a little thinner than my badge (sorry I don't have a micrometer with me at the moment). It is 2 ¼" wide and 3 ½" tall—a little bit larger than my badge. So it covers the back side of the badge.

b. Where exactly does it need to be on the badge?

It might only need to cover where the chip is but you would have to do some research on that.

c.   Does it have to be aluminum or can we use another material that prevents reading of the info from the magnetic strip?

Your questions leads me to think you could contact a badge holder company and also ask these questions. Please do some research to specify how the AL works to protect the information on the badge and if there is other material that can do the same thing? Glenn we would appreciate your input.

Great suggestion Flo.

I don't know if it needs to be aluminum or if it has to cover the whole badge.

You could check what works with your ATM or credit card. When you go to purchase something with your ATM card, place your test material (size, thickness, material,…   underneath the chip of your card. If the card reader is not able to read your card, the material is working. If it is able to read your card, your material is not blocking your chip enough.

Glenn

I have used tape and glue to make my badge holder more valuable to me by adding a few things.

>	The ink well of a pen is taped to the side of the badge holder
>	A small tape measure is glued to the back (I wish it were both English and metric)
>	An emery board is glued on the back for filing a finger nail or that pesky hang nail.
>	I would like a light that points in the direction I'm walking or a maybe a thumb drive
>	My wife is an elementary teacher and thinks a whistle would be valuable.

The most important component of your prototype right now is that you test it out. Make a few of them and hand them out to friends and family and find out what they think.

>	Is it too heavy?
>	Is it too big?
>	Are all of these tool ideas valuable on the badge holder?
>	Are you aiming at the right group of interested people?
>	Is the spot where the lanyard/clip attaches strong enough?
>	What is too much?
>	Does it have style?
>	Not everything has to be 3D printed—leather, metal, laminated cardboard