1. **The Metaphor:** The impression that a piece leaves with a reader is a reflection of how well it communicated its point. After reading the piece, write a concise summary of the metaphor that is being used in a few sentences of your own words. This will provide the author with a picture of what you took away from reading their writing. If this does not agree with what they intended for the reader to take away, it can be a valuable source of feedback for revision.

The author uses the metaphor of a student packing for a study abroad programming, focusing solely on the clothing aspect of it. They talk about the closet located in the home country as the main memory, the clothes that they decide to bring with them as the cache, the clothing that they have easy access to i.e. the things that are not stored away (though this detail is not clearly mentioned) and the clothes that they use every day as the ALU. They also relate this metaphor to cache hits and misses, a cache hit being if they need a piece of clothing and have it available with them while the cache misses are clothes that they forgot to pack. Further, they relate this to spatial and temporal locality. For spatial locality, the author uses the idea that if it is cold and the person needs gloves, it is likely that they will also need a beanie and a scarf. Also, they use the idea of temporal locality, they use the idea of if it snows outside, it will likely be cold for the next few days so if they use gloves today, they will also likely need them the next few days.

2. The Elements: The prompt explicitly asks that the metaphor elements corresponding to the main memory, cache, registers and ALU be identified.

a. For each of the computing elements below, fill in the corresponding metaphor element that was identified by the author. If you think that one has not been clearly defined indicate that by writing "Not clearly specified."

      i.   The main memory: The closet back home

      ii.   The cache: The clothes brought with them

      iii.   The CPU registers: Clothes stored away but with them (?)

      iv.   The ALU: The clothes they wear everyday and have immediate access to

b. Of the metaphor elements identified in part a:

      i.   Which one did you find the most effective in illustrating the role of the corresponding computing element in a system with caching? Briefly describe why you found this element more effective than the others.

I think the most effective metaphor in this case was the closet back home because it was very clear and fulfilled its purpose. It was also written out in a way that was clear and there was no confusion with what it was meant to represent and why or how it represented that specific thing.

ii.   Which one did you find the least effective in illustrating the role of the corresponding computing element in a system with caching? Give concrete suggestions for how this could be improved. You might suggest different metaphor elements that could be used or how the chosen element could be used more effectively

The one that was least effective was probably the registers. This may just be because of the way that it was communicated and I did not quite understand where the clothes that were stored in the registers would be in the study abroad situation and I just assumed that those were the clothes that were with the person but stored away.

3. Hits and Misses: The prompt explicitly asks that the metaphor be sufficiently rich to be used to explain cache hits and cache misses.

a. Does the author use the metaphor to explain cache hits and cache misses? If no, make some concrete suggestions for how these ideas might be explained using the author's metaphor and then skip to question 4.

Yes

b. Were the explanations of cache hits and misses factually correct? If not, briefly explain the way in which you believe that they are incorrect.

Yes, they were.

c. Make at least one concrete suggestion for how you think the ideas of cache hits and cache misses might be improved.

I think that currently, with the idea of a cache miss, there would be no way to actually retrieve the clothes that are missed, which doesn't make sense with how it actually works in a computer so maybe if you change things around like I suggested in part 6, a cache miss could be fixed and accessed.

4. Locality: The prompt explicitly asks that the metaphor be used to explain how spatial and temporal locality contribute to cache efficiency.

a. Does the author explain spatial and temporal locality? If no, make some concrete suggestions for how these ideas might be explained using the author's metaphor and then skip to question 5.

Yes

b. Were the explanations of temporal and spatial locality factually correct? If not, briefly explain the way in which you believe that they are incorrect.

Yes

c. Make at least one concrete suggestion for how you think the ideas of temporal and spatial locality might be improved.

I think the author explained these concepts well and that they made sense. Maybe one thing that could be changed is that during spatial locality, if the computer believes a piece of information is likely to be used, it moves it to the cache. With the current metaphor, there is no place to move it. So maybe with the suggested metaphor, it would make sense because you could move the gloves, beanie, etc from the stored clothes (main memory) to your more accessible clothes (registers).

5. Length: The target length was 400-600 words. However, that is not a hard limit. More important here is whether the writing is of an appropriate length to address the prompt <u>both full and concisely</u>.

> a. If the author were to add to their response, which topic(s) would benefit from additional explanation? What concrete suggestions do you have for doing so?
> I think maybe they could explain the registers better because I was unsure about that.

> b. If the author were to shorten their response, what topic(s) could be explained equally well in fewer words? What concrete suggestions do you have for doing so?

They could maybe make the explanation for cache hits and misses more concise. This could be done by maybe removing sentences such as 'This is very annoying and time consuming.' Because the same point can be made without this. 'Now, the student has to wait until they go back home for break to get the article of clothing. Then they will have to go through the collection of all of their clothes to find it.' I think this sentence could also be shortened and changed so it is more realistic and relates more to how a computer operates.

> c. Would you recommend expanding or contracting the overall length of the draft? Briefly explain why and how you might suggest implementing your recommendation.
> I think it could maybe be contracted a little bit by removing the extra sentences but adding a one sentence explanation for the registers.

6. Final Thoughts: Is there any additional praise or constructive feedback that you would like to offer that did not fit into your responses to earlier questions? This would also be an appropriate location to make constructive suggestions about structural or grammatical issues with the writing.
I would maybe change the elements of the metaphor around a little bit and make it so the main memory is clothes that they have with them but are stored away, the cache could be clothes that they put in drawers that they will only need for certain rare occasions, the registers could be clothes in drawers that are more accessible and the person is more likely to use and the ALU could be clothes they regularly wear. With this, the main memory is not completely inaccessible and everything they need is still in the same vicinity and obtainable, which I believe would suit the metaphor better.