



Example of Tool & Execution Errors

Issue Description

Inconsistent behavior of `world_to_pixel` in `SlicedLowLevelWCS`

...
I have a 3D WCS with dimensions corresponding to space, space, and wavelength and what some might call a non-trivial PCij matrix that couples the spectral and spatial dimensions. I find that when I perform a world_to_pixel on the full (unsliced) WCS, I get back the expected result. However, when I perform that same world_to_pixel operation on a single wavelength slice (i.e. a 2D slice with dimensions corresponding to space, space), my world_to_pixel returns an erroneous result for one of the dimensions.

...
Steps to Reproduce

```
>>> ll_sliced_wcs =  
astropy.wcs.wcsapi.SlicedLowLevelWCS(fits_wcs, 0)  
>>> hl_sliced_wcs =  
astropy.wcs.wcsapi.HighLevelWCSWrapper(ll_sliced_wcs)  
>>> hl_sliced_wcs.world_to_pixel(pt)  
(array(1.81818182e+11), array(12.))
```

```  
However, this is not the case. The first pixel entry is essentially infinite.

## Agent Trajectory

**COSIL:** `get_code_of_file_function('astropy/wcs/utils.py', 'wcs_to_celestial_frame')`

**ENV:** I have already checked this function/class is not related to the bug...

**COSIL:** `get_code_of_file_function('astropy/wcs/utils.py', 'pixel_to_skycoord')`

**ENV:** I have already checked this function/class is not related to the bug...

**COSIL:** `get_code_of_file_function('astropy/wcs/wcsapi/utils.py', 'deserialize_class')`

**ENV:** I have already checked this function/class is not related to the bug...

## Error Analysis

**Wrong Tool Selection (T1):** The error is related to incorrect handling of the world\_to\_pixel function under the sliced WCS, but unnecessary investigation into unrelated functions, like wcs\_to\_celestial\_frame and pixel\_to\_skycoord, diverted attention away from the core issue.

**Tool Call Error (T2):** The incorrect result (infinite pixel value) is caused by malformed parameters or improper execution of world\_to\_pixel when slicing the WCS, leading to persistent environment errors.