

## APPENDIX A

### DETAIL OF ALL THE MAPPING TOOLS IN THE MAPPING TOOL MODULE

**TABLE I**  
DETAIL OF ALL THE MAPPING TOOLS IN THE MAPPING TOOL MODULE

Category	Tool	Explanation
Initial Map Creation	map_initial	Initialize the basic settings of the map. Get basic information about vector files and set the display range, background color and coordinate system of the map.
	modify_map_borad	Modify the expanded size of the map boundary relative to the map.
	modify_map_backgrounecolor	Modify the background color of the map.
Adding Map Layer	map_add_layer	Add one vector layer to the map.
	map_add_layer_by_symbol	Add one vector layer to the map using an image as a style.
	modify_polygon_color_by_class	Generates the color values of the vector layer through the specified column data in the attribute table and the specified color ramp .
	modify_polygon_color_by_quantity	Classifies a value field in a vector layer's attribute table, then generates color values for a specified color ramp for each category.
	modify_polygon_style	Modify the fill style of polygon features of the vector layer.
	modify_polygon_color	Modify the color of polygon features in the vector layer.
	modify_line_style	Modify the style of line features in the vector layer.
	modify_line_width	Modify the width of line features in the vector layer.
	modify_line_color	Modify the color of line features in the vector layer.
Adding Map Elements	modify_point_style	Modify the style of point features of the vector layer.
	modify_point_size	Modify the size of point features in the vector layer.
	modify_point_color	Modify the color of point features in the vector layer.
	modify_layer_labels	Add label annotations to the vector layer from the attribute table of vector layer.
	generate_symbol	Use the dalle3 model to generate specified images based on prompt words as map symbols.
	map_add_compass	Add a compass to the map.
	map_add_scalebar	Add a scalebar to the map.
Modify Map Elements	map_add_frame	Add a map legend to the map.
	map_add_legend	Add a map frame to the map.
	map_add_title	Add a map title to the map.
	map_add_textannotation	Add a text annotation to the map.
	map_add_chart_labels	Add chart labels (pie or bar charts) to each feature of the vector layer.
	map_add_chart	Add a chart (pie, bar, line, or scatter) to the map.
	search	When you need to add text notes related to current events, you can use it to obtain relevant information. You should ask targeted questions.
	modify_compass_location	Modify the location of the north arrow.
	modify_compass_width	Modify the size of the north arrow.
Map Saving	modify_compass_color	Modify the color of the north arrow.
	modify_compass_style	Modify the style of the north arrow.
	modify_legend_location	Modify the location of the legend.
	modify_legend_font	Modify the font of the legend.
	modify_legend_name	Modify the name of the legend.
	modify_legend_fontsize	Modify the font size of the legend.
	modify_legend_title_alignment	Modify the alignment of the legend title.
	modify_legend_columns	Modify the number of columns in the legend.
	modify_scalebar_location	Modify the location of the scale bar.
	modify_scalebar_size	Modify the size of the scale bar.
	modify_scalebar_font	Modify the font of the scale bar.
	modify_scalebar_unit	Modify the unit of the scale bar.
	modify_scalebar_precision	Modify the number of decimals displayed on the scale bar.
	modify_scalebar_color	Modify the color of the scale bar.
	modify_gridlines_divisor	Modify the number of latitude and longitude grid.
	modify_gridlines_show	Turn on the Latitude and longitude grid lines.
	modify_gridlines_color	Modify the color of latitude and longitude grid lines.
	modify_gridlines_style	Modify the style of latitude and longitude grid lines.
	modify_gridlines_width	Modify the width of latitude and longitude grid lines.
Modifying Map Frame	modify_frame_ticklength	Modify the length of the longitude and latitude tick marks on the map frame.
	modify_frame_tickwidth	Modify the width of the longitude and latitude tick marks on the map frame.
	modify_frame_unit	Modify the unit of the longitude and latitude markers on the map frame.
	modify_frame_precision	Modify the number of decimal in the longitude and latitude markers on the map frame.
	modify_frame_markers_show	Turn on the longitude and latitude labels and tick marks on the map frame.
	modify_frame_markers_fontsize	Modify the font size of the longitude and latitude markers on the map frame.
	modify_title_fonsize	Modify the font size of the map title.
	modify_title_font	Modify the font of the map title.
	modify_title_weight	Modify the weight of the map title.
	modify_title_color	Modify the color of the map title.
Modifying Text Annotation	modify_title_height	Modify the height of the map title relative to the bottom of the map.
	modify_title_alignment	Modify the alignment of the map title.
	modify_textannotation_fontsize	Modify the font size of the text annotation.
	modify_textannotation_font	Modify the font of the text annotation.
	modify_textannotation_weight	Modify the weight of the text annotation.
	modify_textannotation_color	Modify the color of the text annotation.
	modify_chart_pie_labels	Show value labels on pie chart.
	modify_chart_bar_scatter_color	Modify the color of the bar chart and scatter chart.
	modify_chart_line_style	Modify the style of a line chart, including color, marker style, and line style.
	modify_chart_scatter_style	Modify the style of scatter plot points.
Map Saving	map_save	Generating the designed map.

## APPENDIX B

### DETAIL OF ALL THE EXPERIMENTAL PROCESS

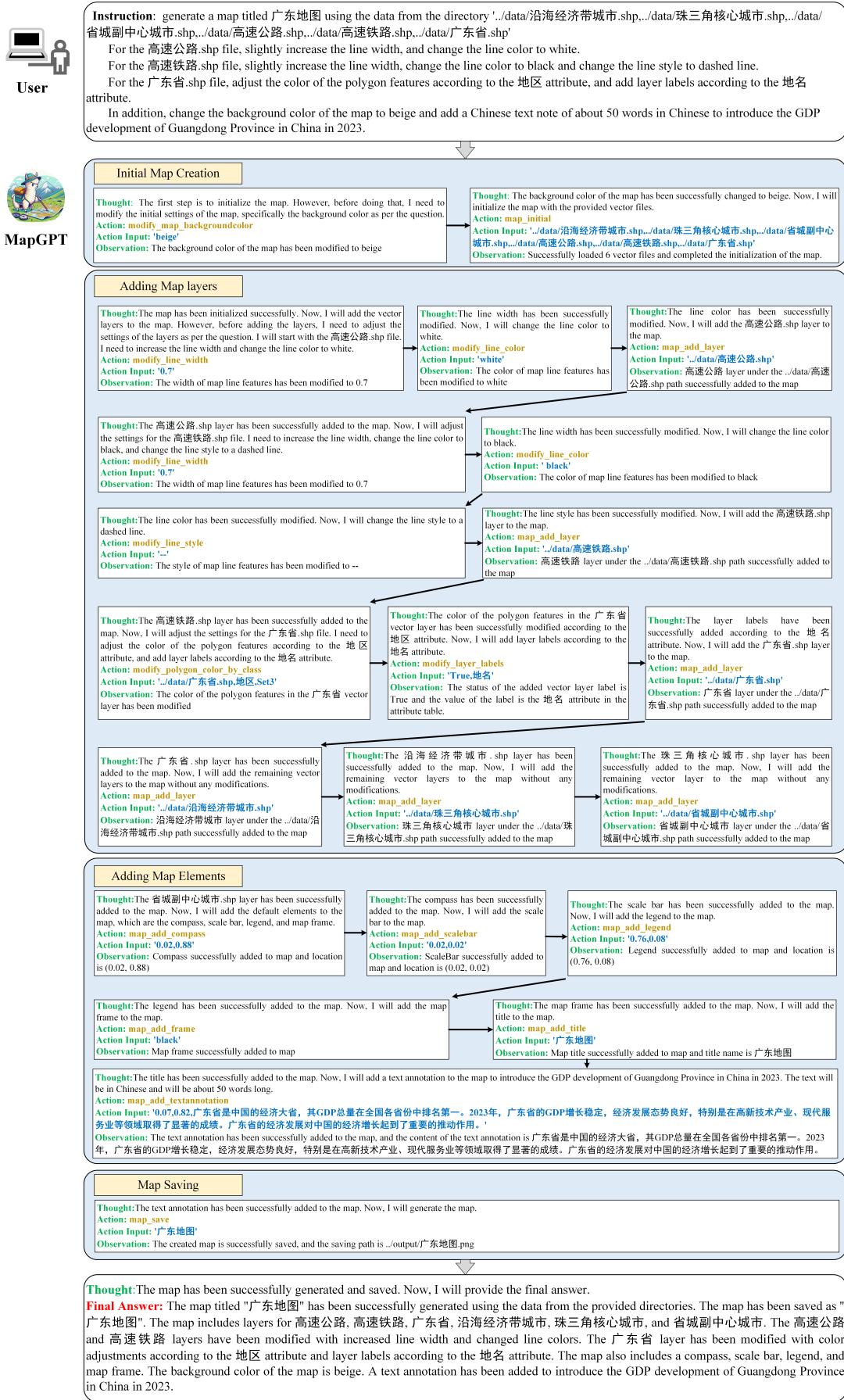


Fig. 1. The mapping process of Case 1 output by MapGPT.

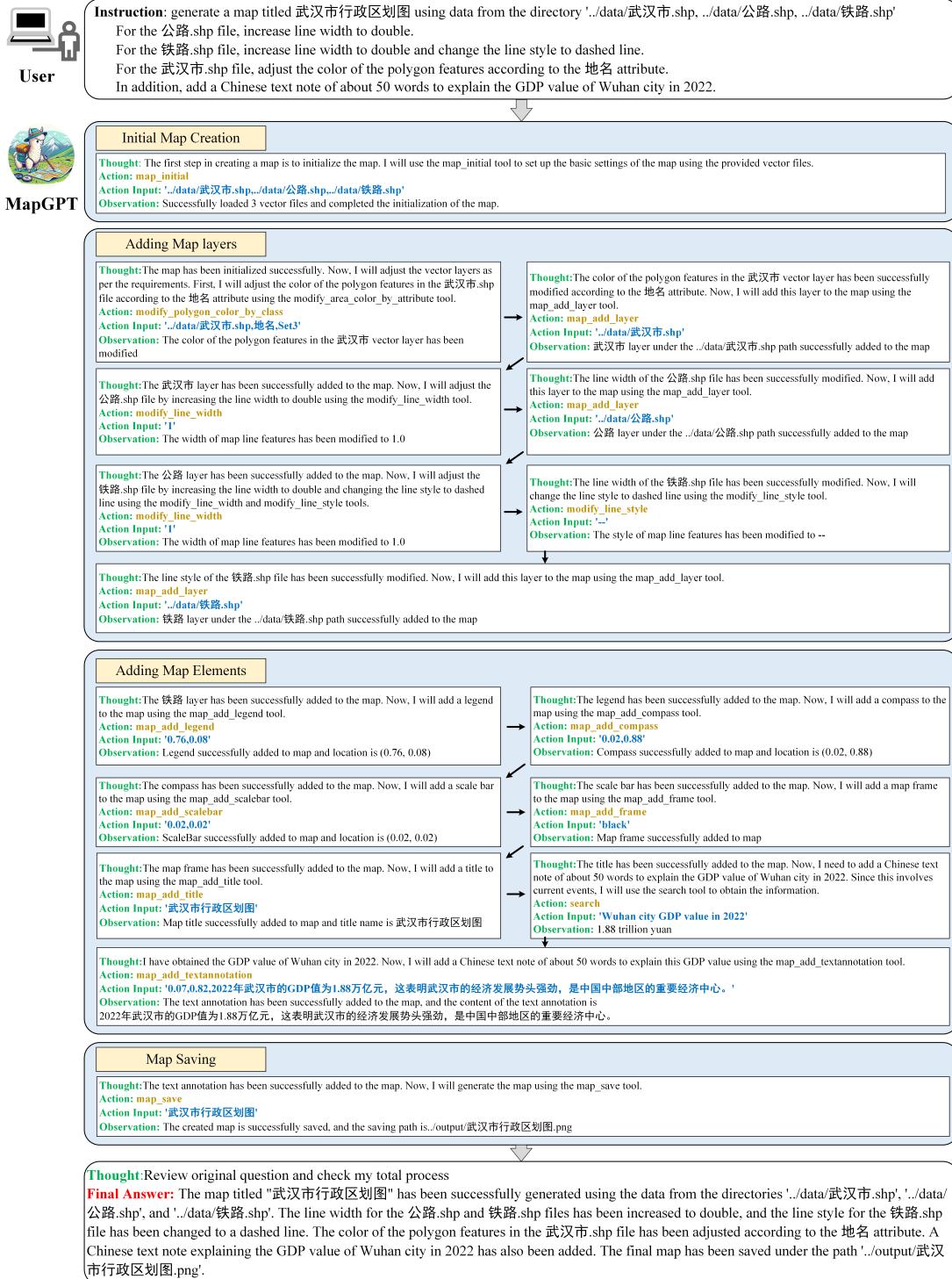


Fig. 2. The mapping process of Case 2 output by MapGPT.



Fig. 3. The mapping process of Case 3 output by MapGPT.

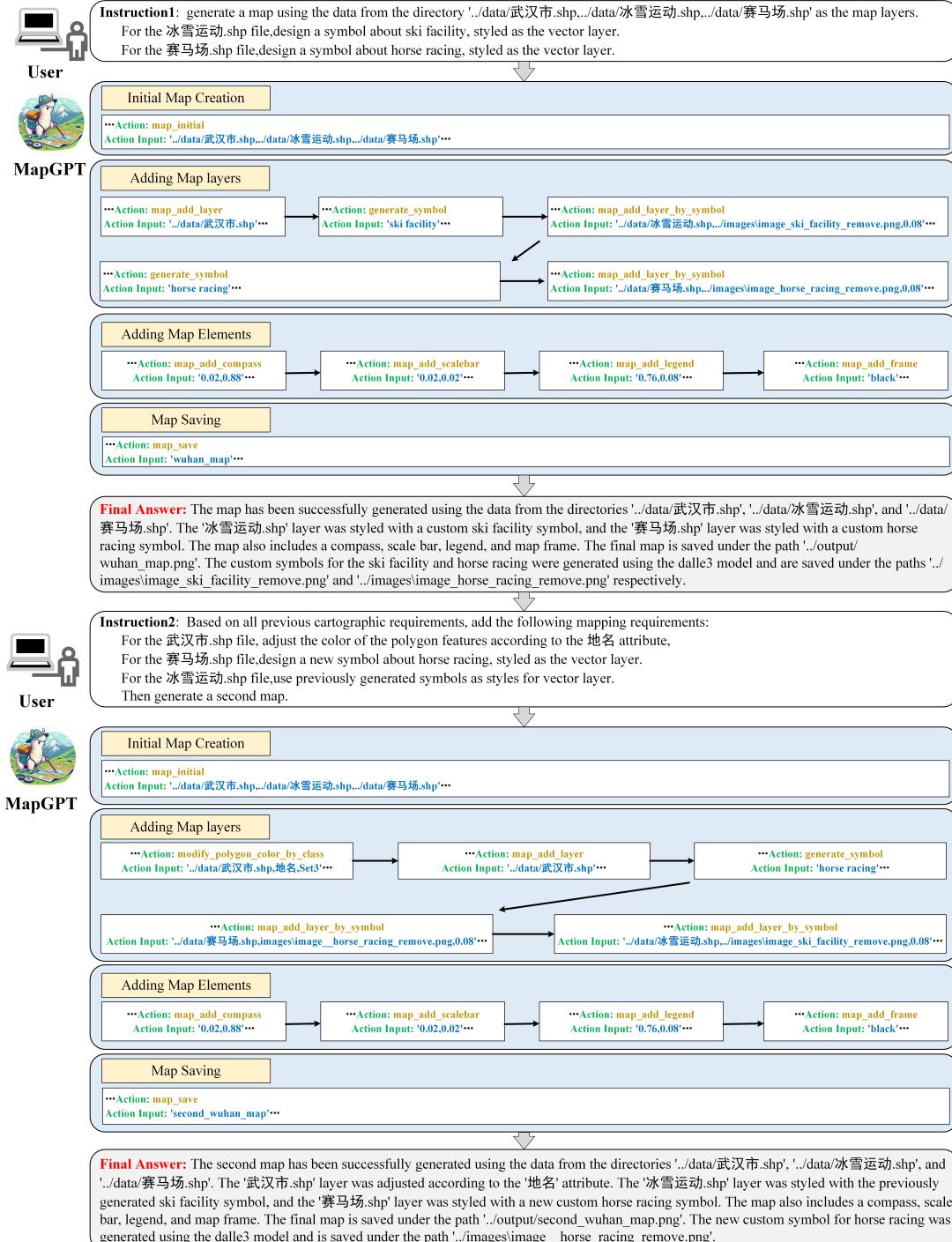


Fig. 4. The mapping process of Case 4 output by MapGPT.

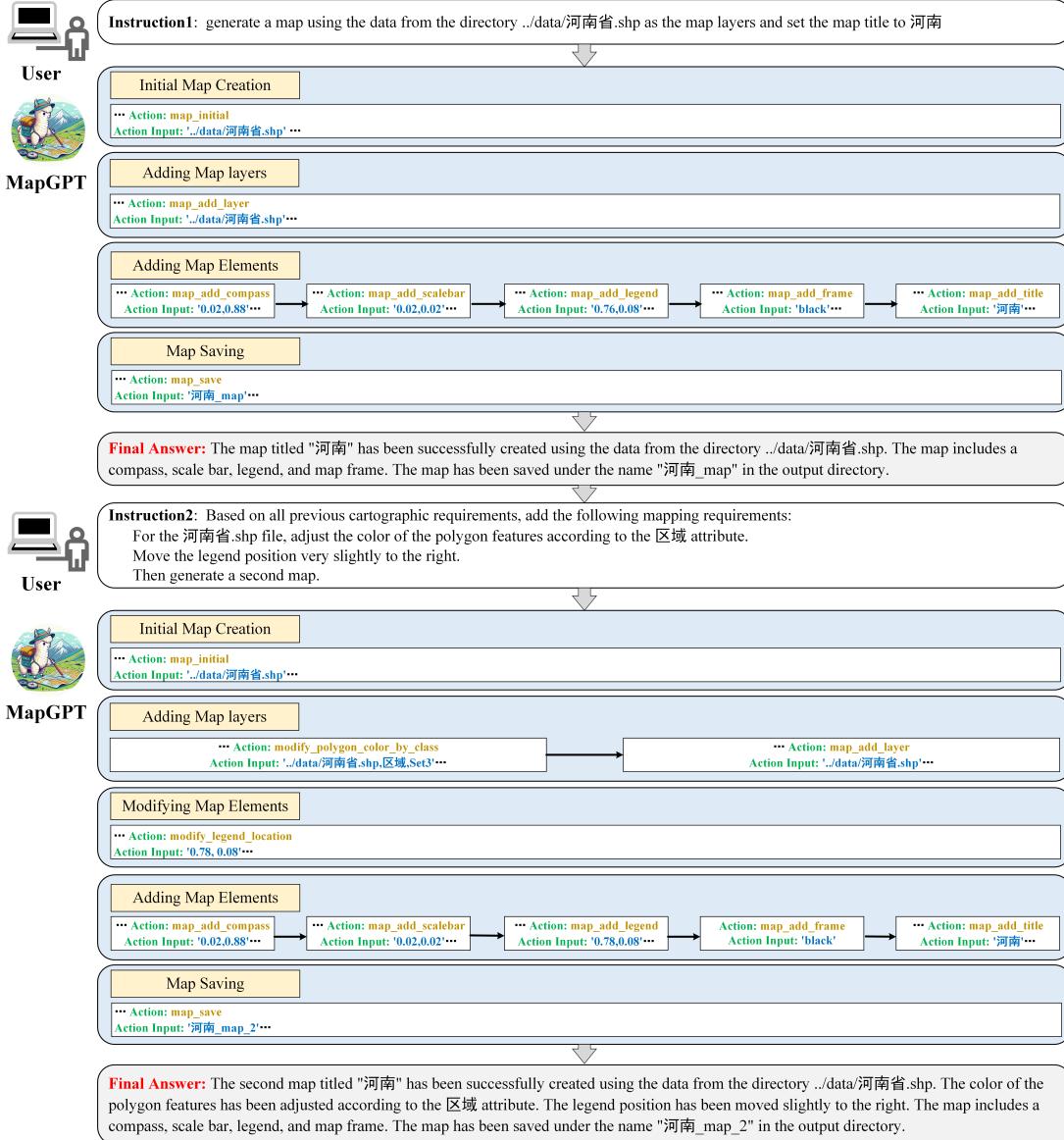


Fig. 5. The mapping process of Case 5 output by MapGPT.