Name: **2D Floor Planner**

You have to make a swing based GUI software with a canvas panel and a control panel [at the minimum] to make 2D floor plans of houses. The basic version should be able to add rooms of certain dimensions with floor color to identify them [just the color of the rectangle in the software should be different for different kind of rooms, i.e. bedroom is green, bathroom is blue etc.]. The user should be able to add different sized rooms, define its position with respect to other rooms already added and check for validity of placement [i.e. two rooms cannot overlap]. Other features will be placing doors between rooms and windows in rooms. Checks should also be there so that they do not overlap. The ultimate expected feature is placing basic furnitures /fixtures in rooms. The marking scheme is as follows:

Feature	Testing criteria	Marks
Basic GUI for creation of rooms with proper color coding and placing them just side by side on the canvas in a raster scanning manner. There is just overlap of room check, no door and windows and fixtures, no relative orientation.	The software runs and the GUI is rendered on your laptop during the demo. The design is close to the generic guideline, as discussed below. The examiner will ask you to add rooms and they should be added without overlap in a row-major order. The overlap check is successful during adding only. Nothing more **[No partial marking in between either 10 or 0]**	+10
Provision for adding subsequent rooms with relative position to previous rooms [i.e room 4 is south of room 2 with left wall aligned etc.], provision to save the plan in your own file format.	The examiner will check whether rooms can be added relative to a previously selected room or not. Provision should be there for the relative position of north east west and south with left right and center alignment. While making alignment overlap check should be done, if the requested alignment or position is resulting in two rooms overlapping some error message should appear. Room alignments can be changes later also by selecting them **[5 marks for this much]** Save the plan, exit the software and reload the plan (opening the file). If everything is retained the second check is done **[5 marks for this]**	+5 +5
Provision for dragging any room and changing orientation, editing with mouse and pop up options.	The editing can be done by clicking the room and dragging it over the canvas. When mouse button is released the overlap check should be done, if it is non overlapping then place it where it is else show a dialogue box saying overlap	+5

	error. Once okay is clicked in the dialogue box the room should return back to its original place (snap back, no animation required) **[5 marks for this]**	
Provision to add door and windows and basic furniture (bed, table, sofa, etc.) and fixtures (commode, washbasin etc.) on room with overlap check.	Other than rooms there should be provision to add furniture/fixtures which can be done by image buttons or image holders and png images. The furniture/fixtures can be rotated in 90 degree steps. basic furniture list is bed, chair, table, sofa, dining set. Basic fixture list is commode, washbasin, shower, kitchen sink and stove. Door and windows should appear on the walls, doors as opening in the wall [discontinuity in wall line between two rooms] and windows should be dashed line. Door can windows cannot be overlapped and there cannot be a window between rooms. Also bedroom and bathroom cannot have a door to outside. **[5 marks for all]** extra tip: If you want an open kitchen make the door size equal to the wall length.	+5

Salient points:

- Java swing must be used and the entire software should be running on desktop [not web]. It is recommended that the application opens and remains in fullscreen mode.
- Walls should be drawn automatically between rooms
- The recommended color scheme for rooms: Bedroom: green, Bathroom: blue, Kitchen: red, Drawing room/dining space: yellow/orange, walls: black, outside: light gray. No stairs as of now. Furniture/fixtures can be png images [get the idea from here]
- Upward direction is north by default
- You may use other libraries to support your functionalities
- The generic UI can be a control panel and a canvas where the canvas is 3/4th width of the screen (- margins) and the control panel (on the left or right of it) is the remaining 1/4th. The height of both is equal to the screen height (- margins). To get a better idea you may look here for inspiration and ideas.
- You may make your project better by having a dot grid for reference, snapping to grid, snapping to walls between rooms when dragged, host of other furniture and fixtures, provision to draw free walls and angular walls etc. But that won't give any extra marks or your added features won't compensate for missing features at a level. This you may just do for flexing your CS skills on Github!