Boundary Condition Implementation

- Implicit BCs are used in PUMA when any of the implicit time-integration schemes are used (i.e. the BC is evaluated at the next timestep as opposed to the current timestep).
- The boundary condition Jacobian J_{BC} ($\frac{\partial Q_{BC}}{\partial Q}$) is obtained numerically using central differences, which is completely general and does much to improve the maintainability of the code.
- There are several types of BCs implemented in PUMA, and more can be added without much difficulty as and when wanted.

Type	**Description**	**Variable values specified**
0	Do nothing	
1	Fixed at freestream	
2	Fixed at given values	ρ,u,v,w,p
3	First order extrapolation from the interior	
4	Second order extrapolation from the interior	
5	Inflow/outflow (Riemann)	
6	Specified p_0, T_0	p_0, T_0
7	Fixed back pressure pressure	p
8	Tangency	
9	No slip adiabatic wall	
10	No slip fixedtemperature wall T_{wall}	T_{wall}
11	Zero u velocity	
12	Zero v velocity	
13	Zero w velocity	