CSE131s: Computer Programming

Spring 2022

Project: Matrix Calculator

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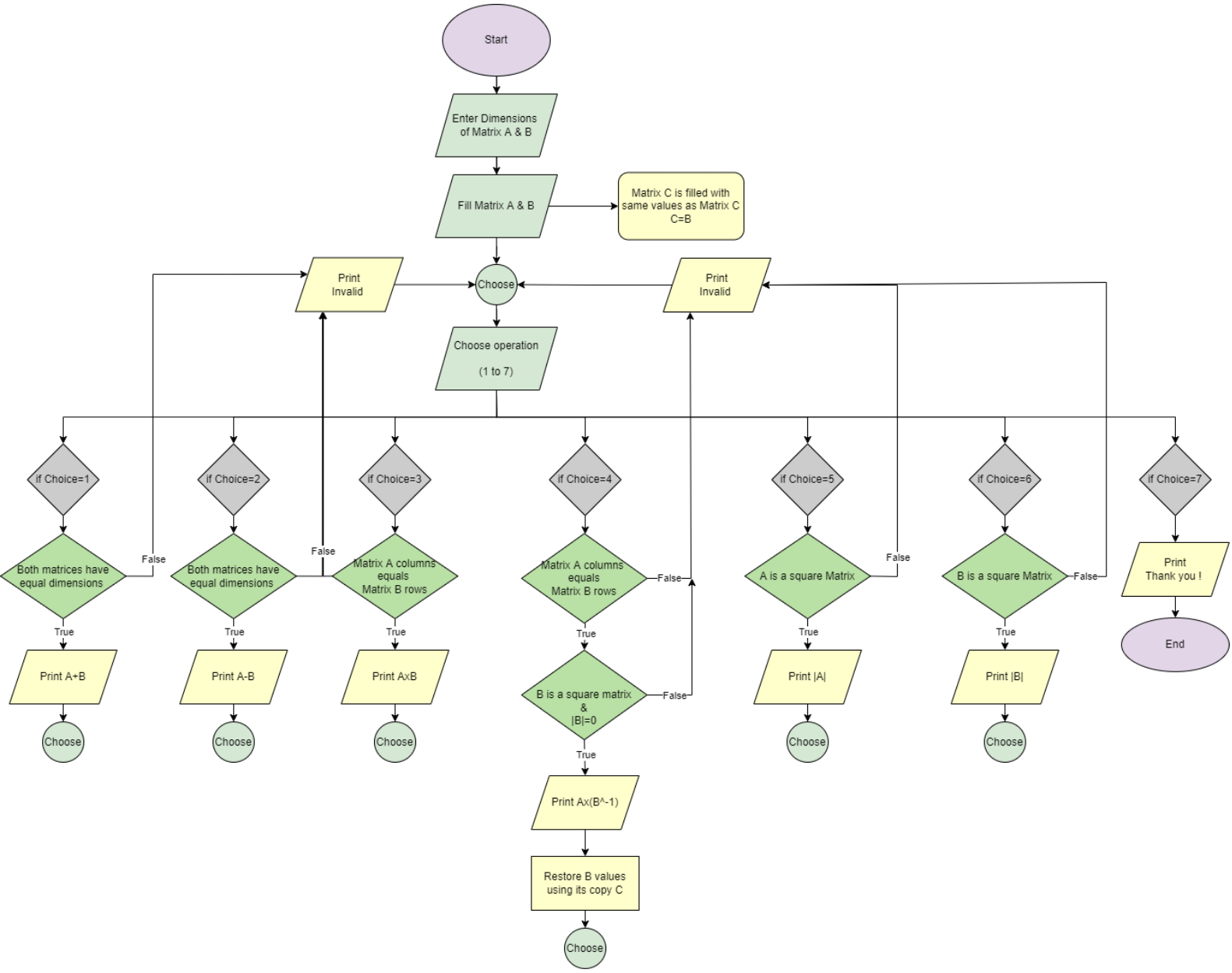
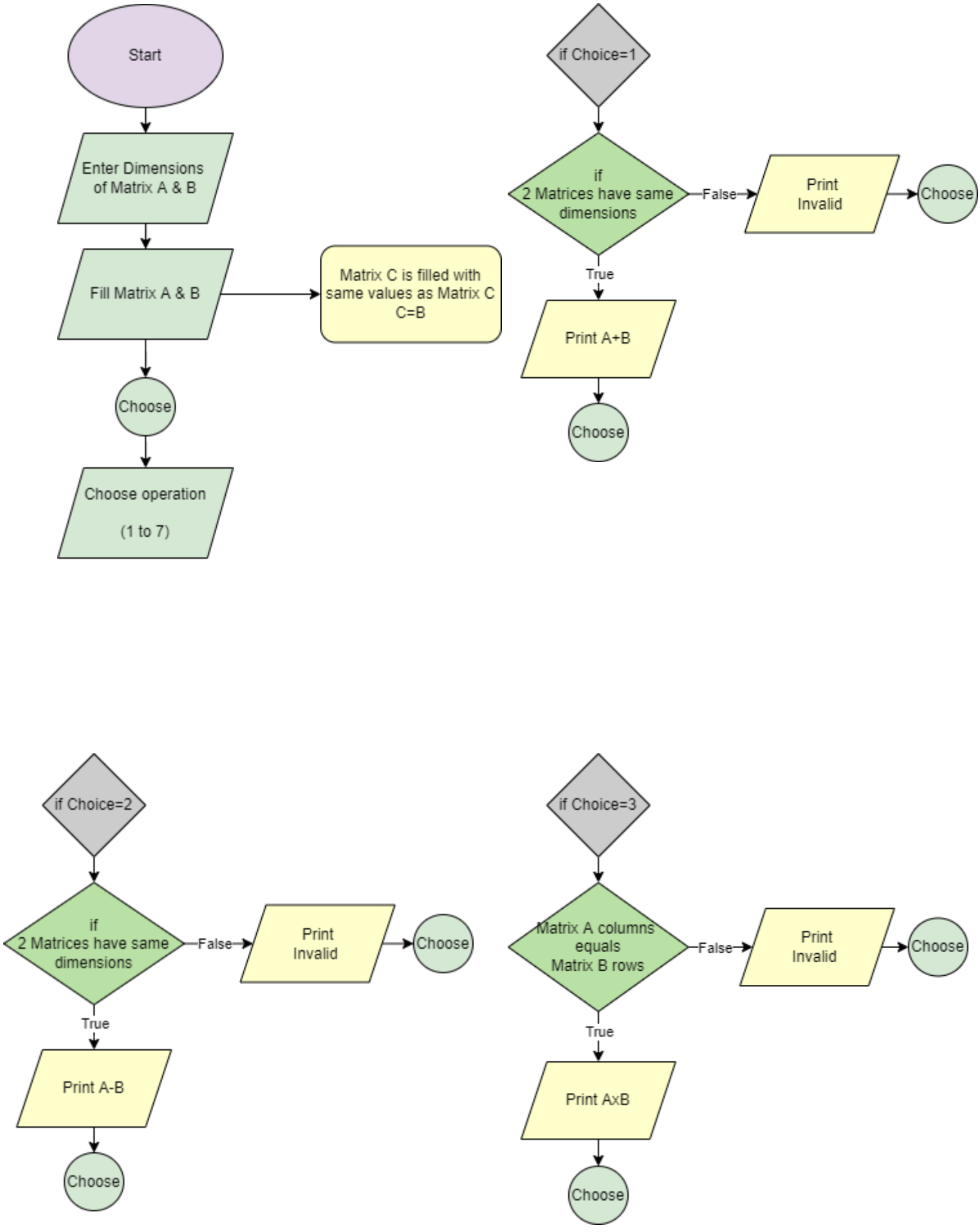
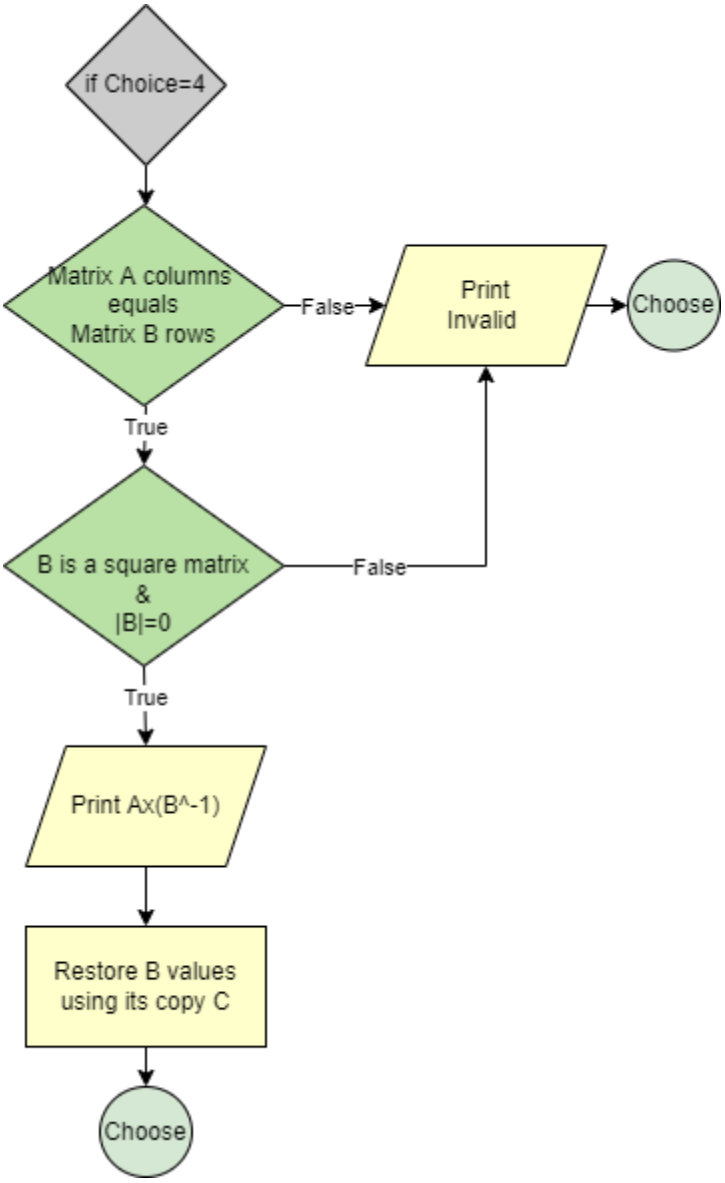
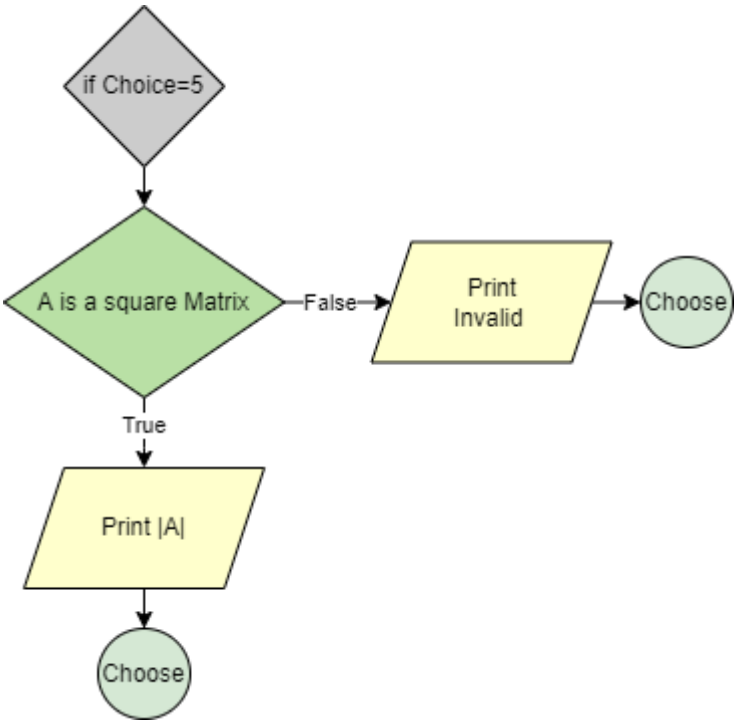
SEC: 10

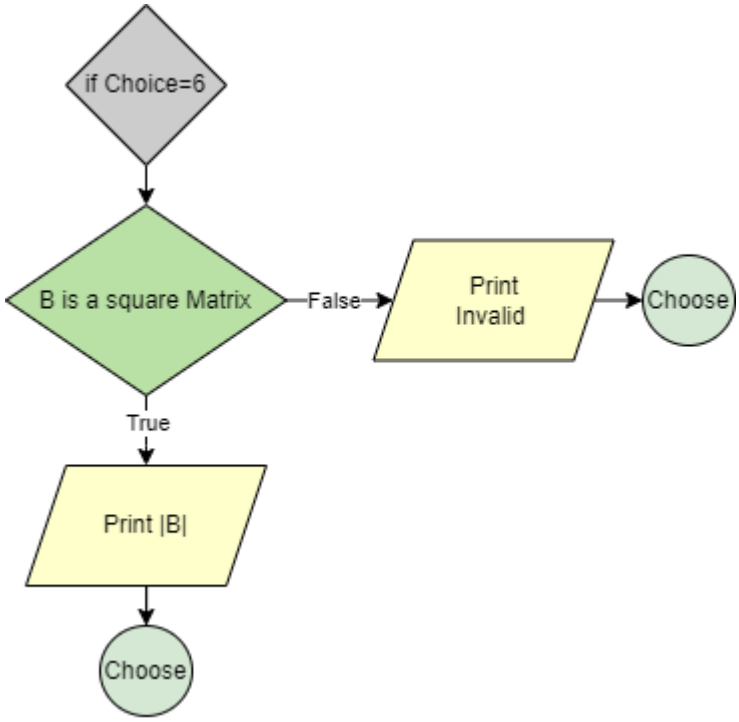
Main Flow of the Program

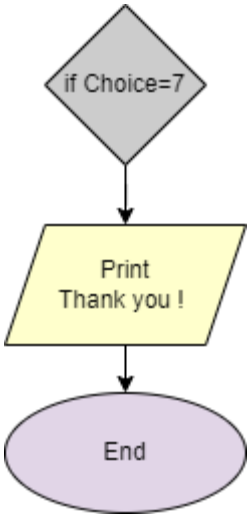



Start
Enter Dimensions of Matrix A & B
Fill Matrix A & B
Matrix C is filled with same values as Matrix C C=B
Choose
Choose operation (1 to 7)
if Choice=1
if 2 Matrices have same dimensions
False
Print Invalid
Choose
True
Print A+B
Choose
if Choice=2
if 2 Matrices have same dimensions
False
Print Invalid
Choose
True
Print A-B
Choose
if Choice=3
Matrix A columns equals Matrix B rows
False
Print Invalid
Choose
True
Print AxB
Choose


if Choice=4
Matrix A columns equals Matrix B rows
False
Print Invalid
Choose
True
B is a square matrix & |B|=0
False
True
Print Ax(B^-1)
Restore B values using its copy C
Choose


if Choice=5
A is a square Matrix
False
Print Invalid
Choose
True
Print |A|
Choose


if Choice=6
B is a square Matrix
False
Print Invalid
Choose
True
Print |B|
Choose


if Choice=7
Print Thank you !
End

Functions

`mat_add_or_sub`	Prints the result of adding or subtracting two matrices. *-Parameters* (matrix A, matrix B, Rows, Columns, sign (+) or (−))
`mat_multiply`	Prints the result of multiplying two matrices. *-Parameters* (matrix A, matrix B, B rows or A columns, A rows, B columns)
`det_2`	Integer return type function returns the determinant of a 2×2 matrix. *-Parameters* (2×2 matrix)
`det_NxN`	A Recursive function that returns the determinant of an up to 10×10 matrix. *-Parameters* (matrix , no. of Rows or Columns $\because Rows = Columns$)
`cofactors`	Gets the cofactors of each element of matrix Y to convert it to a matrix of cofactors. *-Parameters* (matrix Y, no. of Rows or Columns $\because Rows = Columns$)
`adjoint`	Gets the adjoint or Transpose of matrix Y. *-Parameters* (matrix Y, no. of Rows or Columns $\because Rows = Columns$)
`mat_div`	Uses the three previous functions to get the inverse of matrix B and prints the result of multiplying matrix A with the inverse of matrix B. *-Parameters* (matrix A, matrix B, B rows or A columns, A rows, B columns)

Screenshots of the program