(10 points)
You are given two consecutive or successive digital image frames F1[i][j] and F2[i][j] in a digital video stream. The image frames F1 and F2 differ by a small amount due to moving objects in the video. Consider an 5×5 image block f1[m][n] in F1 (see Figure) centered at (i1,j1). The motion of this block is estimated by searching for a best matching block f2[m][n] in F2 in a 15×15 size image region centered at (i1,j1) in F2. The search is made by computing the difference measure

$$D = \sum_{m=1}^{5} \sum_{n=1}^{5} (f1[m][n] - f2[m][n])^2 \tag{1}$$

for every possible 5×5 candidate block f2[m][n] in the 15×15 image region in F2. The best matching block f2[m][n] is that with the minimum difference measure D. Suppose that the center of the best matching block f2[m][n] in F2[i][j] is at (i2,j2). Write a computational algorithm to find (i2,j2) given (i1,j1). Assume that (i1,j1) is an interior point more than 8 units from the border of F1 on all sides so that your algorithm becomes simple (there is no need to deal with border cases). You can write the algorithm in any high-level programming language (C/Fortran/Pascal/etc.) or english psuedo-code. Just write the core of the algorithm ignoring syntax, variable declarations, etc.