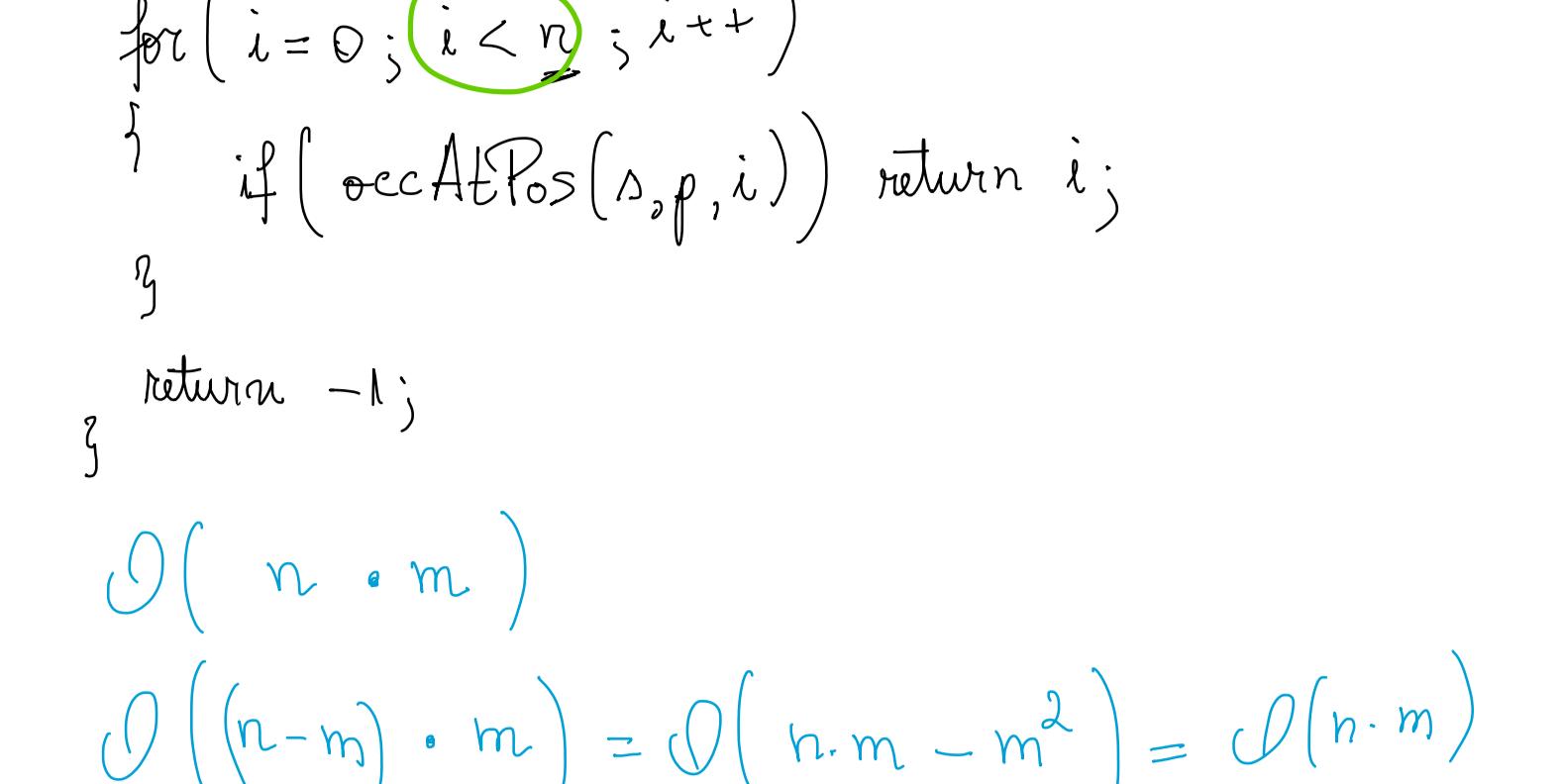


**INPUT :**  $s[0 \dots n-1]$  - text  
 $p[0 \dots m-1]$  - pattern

**OUTPUT :** prima apariție a lui  $p$  în  $s$ , dacă există  
 $-1$ , altfel

### Alg Hair



$\{ \text{occAtPos}(s, p, i)$

$\{ n = s.\text{size}(); m = p.\text{size}(); \text{if}(i+m > n) \text{return false};$

$\{ \text{for}(i=0; i < m; i++)$

$\{ \text{if}(s[i+j] \neq p[j]) \text{return false};$

$\} \text{return true;}$

$\} \text{new}(s, p)$

$\{ n = s.\text{size}(); m = p.\text{size}(); \text{for}(i=0; i < n; i++)$

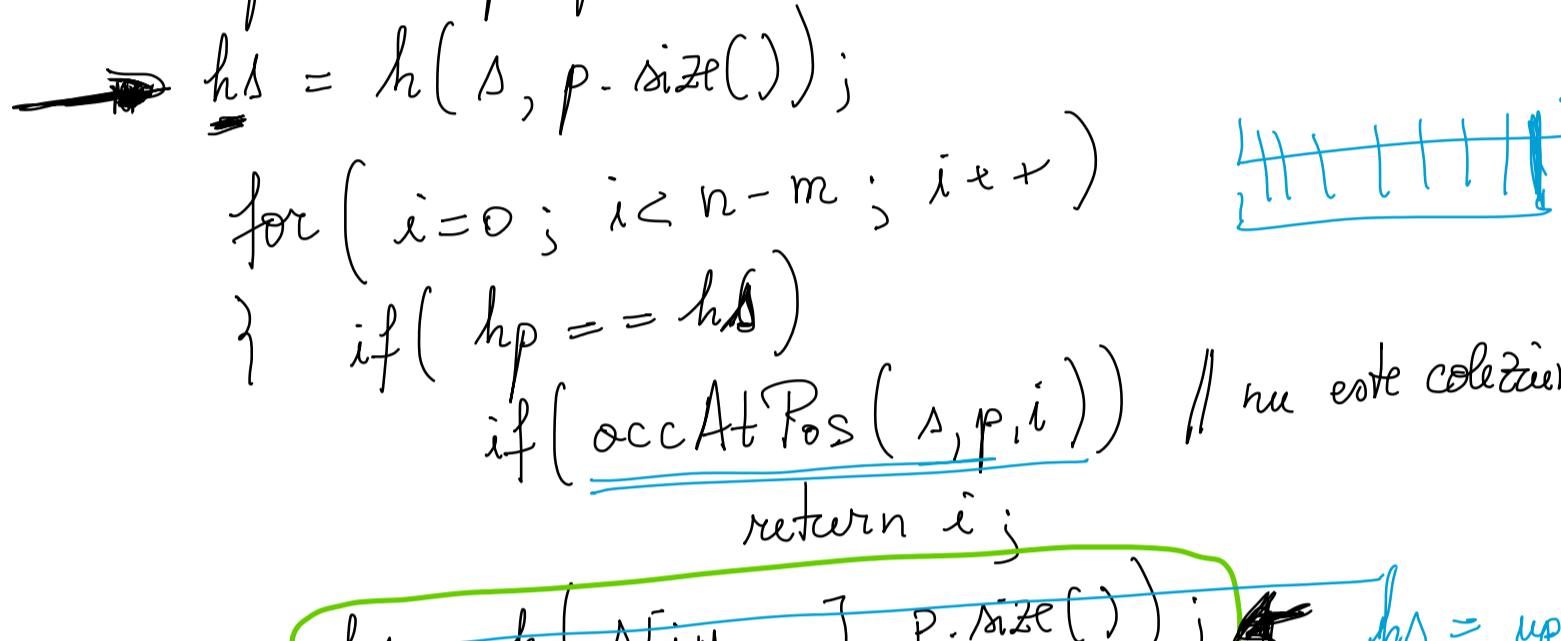
$\{ \text{if}(\text{occAtPos}(s, p, i)) \text{return i;}$

$\} \text{return } -1;$

$O(n \cdot m)$

$O((n-m) \cdot m) = O(n \cdot m - m^2) = O(n \cdot m)$

4) cel mai favorabil caz  $\frac{n}{m}$



$\{ p[0] = s[0], p[1] = s[1], p[2] = s[2], p[3] = s[3], p[4] = s[4], p[5] = s[5], p[6] = s[6], p[7] = s[7], p[8] = s[8], p[9] = s[9], p[10] = s[10], p[11] = s[11], p[12] = s[12], p[13] = s[13], p[14] = s[14], p[15] = s[15], p[16] = s[16], p[17] = s[17], p[18] = s[18], p[19] = s[19], p[20] = s[20], p[21] = s[21], p[22] = s[22], p[23] = s[23], p[24] = s[24], p[25] = s[25], p[26] = s[26], p[27] = s[27], p[28] = s[28], p[29] = s[29], p[30] = s[30], p[31] = s[31], p[32] = s[32], p[33] = s[33], p[34] = s[34], p[35] = s[35], p[36] = s[36], p[37] = s[37], p[38] = s[38], p[39] = s[39], p[40] = s[40], p[41] = s[41], p[42] = s[42], p[43] = s[43], p[44] = s[44], p[45] = s[45], p[46] = s[46], p[47] = s[47], p[48] = s[48], p[49] = s[49], p[50] = s[50], p[51] = s[51], p[52] = s[52], p[53] = s[53], p[54] = s[54], p[55] = s[55], p[56] = s[56], p[57] = s[57], p[58] = s[58], p[59] = s[59], p[60] = s[60], p[61] = s[61], p[62] = s[62], p[63] = s[63], p[64] = s[64], p[65] = s[65], p[66] = s[66], p[67] = s[67], p[68] = s[68], p[69] = s[69], p[70] = s[70], p[71] = s[71], p[72] = s[72], p[73] = s[73], p[74] = s[74], p[75] = s[75], p[76] = s[76], p[77] = s[77], p[78] = s[78], p[79] = s[79], p[80] = s[80], p[81] = s[81], p[82] = s[82], p[83] = s[83], p[84] = s[84], p[85] = s[85], p[86] = s[86], p[87] = s[87], p[88] = s[88], p[89] = s[89], p[90] = s[90], p[91] = s[91], p[92] = s[92], p[93] = s[93], p[94] = s[94], p[95] = s[95], p[96] = s[96], p[97] = s[97], p[98] = s[98], p[99] = s[99], p[100] = s[100], p[101] = s[101], p[102] = s[102], p[103] = s[103], p[104] = s[104], p[105] = s[105], p[106] = s[106], p[107] = s[107], p[108] = s[108], p[109] = s[109], p[110] = s[110], p[111] = s[111], p[112] = s[112], p[113] = s[113], p[114] = s[114], p[115] = s[115], p[116] = s[116], p[117] = s[117], p[118] = s[118], p[119] = s[119], p[120] = s[120], p[121] = s[121], p[122] = s[122], p[123] = s[123], p[124] = s[124], p[125] = s[125], p[126] = s[126], p[127] = s[127], p[128] = s[128], p[129] = s[129], p[130] = s[130], p[131] = s[131], p[132] = s[132], p[133] = s[133], p[134] = s[134], p[135] = s[135], p[136] = s[136], p[137] = s[137], p[138] = s[138], p[139] = s[139], p[140] = s[140], p[141] = s[141], p[142] = s[142], p[143] = s[143], p[144] = s[144], p[145] = s[145], p[146] = s[146], p[147] = s[147], p[148] = s[148], p[149] = s[149], p[150] = s[150], p[151] = s[151], p[152] = s[152], p[153] = s[153], p[154] = s[154], p[155] = s[155], p[156] = s[156], p[157] = s[157], p[158] = s[158], p[159] = s[159], p[160] = s[160], p[161] = s[161], p[162] = s[162], p[163] = s[163], p[164] = s[164], p[165] = s[165], p[166] = s[166], p[167] = s[167], p[168] = s[168], p[169] = s[169], p[170] = s[170], p[171] = s[171], p[172] = s[172], p[173] = s[173], p[174] = s[174], p[175] = s[175], p[176] = s[176], p[177] = s[177], p[178] = s[178], p[179] = s[179], p[180] = s[180], p[181] = s[181], p[182] = s[182], p[183] = s[183], p[184] = s[184], p[185] = s[185], p[186] = s[186], p[187] = s[187], p[188] = s[188], p[189] = s[189], p[190] = s[190], p[191] = s[191], p[192] = s[192], p[193] = s[193], p[194] = s[194], p[195] = s[195], p[196] = s[196], p[197] = s[197], p[198] = s[198], p[199] = s[199], p[200] = s[200], p[201] = s[201], p[202] = s[202], p[203] = s[203], p[204] = s[204], p[205] = s[205], p[206] = s[206], p[207] = s[207], p[208] = s[208], p[209] = s[209], p[210] = s[210], p[211] = s[211], p[212] = s[212], p[213] = s[213], p[214] = s[214], p[215] = s[215], p[216] = s[216], p[217] = s[217], p[218] = s[218], p[219] = s[219], p[220] = s[220], p[221] = s[221], p[222] = s[222], p[223] = s[223], p[224] = s[224], p[225] = s[225], p[226] = s[226], p[227] = s[227], p[228] = s[228], p[229] = s[229], p[230] = s[230], p[231] = s[231], p[232] = s[232], p[233] = s[233], p[234] = s[234], p[235] = s[235], p[236] = s[236], p[237] = s[237], p[238] = s[238], p[239] = s[239], p[240] = s[240], p[241] = s[241], p[242] = s[242], p[243] = s[243], p[244] = s[244], p[245] = s[245], p[246] = s[246], p[247] = s[247], p[248] = s[248], p[249] = s[249], p[250] = s[250], p[251] = s[251], p[252] = s[252], p[253] = s[253], p[254] = s[254], p[255] = s[255], p[256] = s[256], p[257] = s[257], p[258] = s[258], p[259] = s[259], p[260] = s[260], p[261] = s[261], p[262] = s[262], p[263] = s[263], p[264] = s[264], p[265] = s[265], p[266] = s[266], p[267] = s[267], p[268] = s[268], p[269] = s[269], p[270] = s[270], p[271] = s[271], p[272] = s[272], p[273] = s[273], p[274] = s[274], p[275] = s[275], p[276] = s[276], p[277] = s[277], p[278] = s[278], p[279] = s[279], p[280] = s[280], p[281] = s[281], p[282] = s[282], p[283] = s[283], p[284] = s[284], p[285] = s[285], p[286] = s[286], p[287] = s[287], p[288] = s[288], p[289] = s[289], p[290] = s[290], p[291] = s[291], p[292] = s[292], p[293] = s[293], p[294] = s[294], p[295] = s[295], p[296] = s[296], p[297] = s[297], p[298] = s[298], p[299] = s[299], p[300] = s[300], p[301] = s[301], p[302] = s[302], p[303] = s[303], p[304] = s[304], p[305] = s[305], p[306] = s[306], p[307] = s[307], p[308] = s[308], p[309] = s[309], p[310] = s[310], p[311] = s[311], p[312] = s[312], p[313] = s[313], p[314] = s[314], p[315] = s[315], p[316] = s[316], p[317] = s[317], p[318] = s[318], p[319] = s[319], p[320] = s[320], p[321] = s[321], p[322] = s[322], p[323] = s[323], p[324] = s[324], p[325] = s[325], p[326] = s[326], p[327] = s[327], p[328] = s[328], p[329] = s[329], p[330] = s[330], p[331] = s[331], p[332] = s[332], p[333] = s[333], p[334] = s[334], p[335] = s[335], p[336] = s[336], p[337] = s[337], p[338] = s[338], p[339] = s[339], p[340] = s[340], p[341] = s[341], p[342] = s[342], p[343] = s[343], p[344] = s[344], p[345] = s[345], p[346] = s[346], p[347] = s[347], p[348] = s[348], p[349] = s[349], p[350] = s[350], p[351] = s[351], p[352] = s[352], p[353] = s[353], p[354] = s[354], p[355] = s[355], p[356] = s[356], p[357] = s[357], p[358] = s[358], p[359] = s[359], p[360] = s[360], p[361] = s[361], p[362] = s[362], p[363] = s[363], p[364] = s[364], p[365] = s[365], p[366] = s[366], p[367] = s[367], p[368] = s[368], p[369] = s[369], p[370] = s[370], p[371] = s[371], p[372] = s[372], p[373] = s[373], p[374] = s[374], p[375] = s[375], p[376] = s[376], p[377] = s[377], p[378] = s[378], p[379] = s[379], p[380] = s[380], p[381] = s[381], p[382] = s[382], p[383] = s[383], p[384] = s[384], p[385] = s[385], p[386] = s[386], p[387] = s[387], p[388] = s[388], p[389] = s[389], p[390] = s[390], p[391] = s[391], p[392] = s[392], p[393] = s[393], p[394] = s[394], p[395] = s[395], p[396] = s[396], p[397] = s[397], p[398] = s[398], p[399] = s[399], p[400] = s[400], p[401] = s[401], p[402] = s[402], p[403] = s[403], p[404] = s[404], p[405] = s[405], p[406] = s[406], p[407] = s[407], p[408] = s[408], p[409] = s[409], p[410] = s[410], p[411] = s[411], p[412] = s[412], p[413] = s[413], p[414] = s[414], p[415] = s[415], p[416] = s[416], p[417] = s[417], p[418] = s[418], p[419] = s[419], p[420] = s[420], p[421] = s[421], p[422] = s[422], p[423] = s[423], p[424] = s[424], p[425] = s[425], p[426] = s[426], p[427] = s[427], p[428] = s[428], p[429] = s[429], p[430] = s[430], p[431] = s[431], p[432] = s[432], p[433] = s[433], p[434] = s[434], p[435] = s[435], p[436] = s[436], p[437] = s[437], p[438] = s[438], p[439] = s[439], p[440] = s[440], p[441] = s[441], p[442] = s[442], p[443] = s[443], p[444] = s[444], p[445] = s[445], p[446] = s[446], p[447] = s[447], p[448] = s[448], p[449] = s[449], p[450] = s[450], p[451] = s[451], p[452] = s[452], p[453] = s[453], p[454] = s[454], p[455] = s[455], p[456] = s[456], p[457] = s[457], p[458] = s[458], p[459] = s[459], p[460] = s[460], p[461] = s[461], p[462] = s[462], p[463] = s[463], p[464] = s[464], p[465] = s[465], p[466] = s[466], p[467] = s[467], p[468] = s[468], p[469] = s[469], p[470] = s[470], p[471] = s[471], p[472] = s[472], p[473] = s[473], p[474] = s[474], p[475] = s[475], p[476] = s[476], p[477] = s[477], p[478] = s[478], p[479] = s[479], p[480] = s[480], p[481] = s[481], p[482] = s[482], p[483] = s[483], p[484] = s[484], p[485] = s[485], p[486] = s[486], p[487] = s[487], p[488] = s[488], p[489] = s[489], p[490] = s[490], p[491] = s[491], p[492] = s[492], p[493] = s[493], p[494] = s[494], p[495] = s[495], p[496] = s[496], p[497] = s[497], p[498] = s[498], p[499] = s[499], p[500] = s[500], p[501] = s[501], p[502] = s[502], p[503] = s[503], p[504] = s[504], p[505] = s[505], p[506] = s[506], p[507] = s[507], p[508] = s[508], p[509] = s[509], p[510] = s[510], p[511] = s[511], p[512] = s[512], p[513] = s[513], p[514] = s[514], p[515] = s[515], p[516] = s[516], p[517] = s[517], p[518] = s[518], p[519] = s[519], p[520] = s[520], p[521] = s[521], p[522] = s[522], p[523] = s[523], p[524] = s[524], p[525] = s[525], p[526] = s[526], p[527$