**CHAPTER 3**

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| **Objective :** | Create a 10 × 10 random matrix with the command A = rand(10). Now do the following operations.  • Multiply all elements by 100 and then round oﬀ all elements of the matrix to integers with the command A = fix(A).  • Replace all elements of A < 10 with zeros.  • Replace all elements of A > 90 with inﬁnity (inf).  • Extract all 30 ≤ aij ≤ 50 in a vector b, that is, ﬁnd all elements of A that are between 30 and 50 and put them in a vector b. |
| **MATLAB**  **Code:** | A = rand(10)  A = A\*100  A = fix(A)  for i= 1:10  for j= 1:10  if A(i,j)<10  A(i,j)= 0  end    end  end    for i= 1:10  for j= 1:10  if A(i,j)>90  A(i,j)= inf  end    end  end    b = [];  for i= 1:10  for j= 1:10  if A(i,j)>=30 && A(i,j)<=50  b = [b A(i,j)];  end    end  end  disp('b=')  disp(b); |
| **Output:** | A =  0.6443 0.2077 0.3111 0.5949 0.0855 0.9631 0.0377 0.1068 0.0305 0.1829  0.3786 0.3012 0.9234 0.2622 0.2625 0.5468 0.8852 0.6538 0.7441 0.2399  0.8116 0.4709 0.4302 0.6028 0.8010 0.5211 0.9133 0.4942 0.5000 0.8865  0.5328 0.2305 0.1848 0.7112 0.0292 0.2316 0.7962 0.7791 0.4799 0.0287  0.3507 0.8443 0.9049 0.2217 0.9289 0.4889 0.0987 0.7150 0.9047 0.4899  0.9390 0.1948 0.9797 0.1174 0.7303 0.6241 0.2619 0.9037 0.6099 0.1679  0.8759 0.2259 0.4389 0.2967 0.4886 0.6791 0.3354 0.8909 0.6177 0.9787  0.5502 0.1707 0.1111 0.3188 0.5785 0.3955 0.6797 0.3342 0.8594 0.7127  0.6225 0.2277 0.2581 0.4242 0.2373 0.3674 0.1366 0.6987 0.8055 0.5005  0.5870 0.4357 0.4087 0.5079 0.4588 0.9880 0.7212 0.1978 0.5767 0.4711  A =  64.4318 20.7742 31.1102 59.4896 8.5516 96.3089 3.7739 10.6762 3.0541 18.2922  37.8609 30.1246 92.3380 26.2212 26.2482 54.6806 88.5168 65.3757 74.4074 23.9932  81.1580 47.0923 43.0207 60.2843 80.1015 52.1136 91.3287 49.4174 50.0022 88.6512  53.2826 23.0488 18.4816 71.1216 2.9220 23.1594 79.6184 77.9052 47.9922 2.8674  35.0727 84.4309 90.4881 22.1747 92.8854 48.8898 9.8712 71.5037 90.4722 48.9901  93.9002 19.4764 97.9748 11.7418 73.0331 62.4060 26.1871 90.3721 60.9867 16.7927  87.5943 22.5922 43.8870 29.6676 48.8609 67.9136 33.5357 89.0923 61.7666 97.8681  55.0156 17.0708 11.1119 31.8778 57.8525 39.5515 67.9728 33.4163 85.9442 71.2694  62.2475 22.7664 25.8065 42.4167 23.7284 36.7437 13.6553 69.8746 80.5489 50.0472  58.7045 43.5699 40.8720 50.7858 45.8849 98.7982 72.1227 19.7810 57.6722 47.1088  A =  64 20 31 59 8 96 3 10 3 18  37 30 92 26 26 54 88 65 74 23  81 47 43 60 80 52 91 49 50 88  53 23 18 71 2 23 79 77 47 2  35 84 90 22 92 48 9 71 90 48  93 19 97 11 73 62 26 90 60 16  87 22 43 29 48 67 33 89 61 97  55 17 11 31 57 39 67 33 85 71  62 22 25 42 23 36 13 69 80 50  58 43 40 50 45 98 72 19 57 47  A =  64 20 31 59 0 96 0 10 0 18  37 30 92 26 26 54 88 65 74 23  81 47 43 60 80 52 91 49 50 88  53 23 18 71 0 23 79 77 47 0  35 84 90 22 92 48 0 71 90 48  93 19 97 11 73 62 26 90 60 16  87 22 43 29 48 67 33 89 61 97  55 17 11 31 57 39 67 33 85 71  62 22 25 42 23 36 13 69 80 50  58 43 40 50 45 98 72 19 57 47  A =  64 20 31 59 0 Inf 0 10 0 18  37 30 Inf 26 26 54 88 65 74 23  81 47 43 60 80 52 Inf 49 50 88  53 23 18 71 0 23 79 77 47 0  35 84 90 22 Inf 48 0 71 90 48  Inf 19 Inf 11 73 62 26 90 60 16  87 22 43 29 48 67 33 89 61 Inf  55 17 11 31 57 39 67 33 85 71  62 22 25 42 23 36 13 69 80 50  58 43 40 50 45 Inf 72 19 57 47  b=  31 37 30 47 43 49 50 47 35 48 48 43 48 33 31 39 33 42 36 50 43 40 50 45 47 |