```
double LU[1:n,1:n]; int ps[1:n];  # see Figure 11.16
double sum, x[1:n], b[1:n];

# forward substitution to solve L y = b, storing y in x
for [i = 1 to n] {
  sum = 0.0;
  for [j = 1 to i-1]
    sum = sum + LU[ps[i],j] * x[j];
  x[i] = b[ps[i]] - sum;
}

# backward substitution to solve U x = y for x
for [i = n to 1 by -1] {
  sum = 0.0;
  for [j = i+1 to n]
    sum = sum + LU[ps[i],j] * x[j];
  x[i] = (x[i] - sum) / LU[ps[i],i];
}
```

**Figure 11.17** Solving **`A x = b`** given an LU decomposition of **`A`**.