```
function [x, P] = linearUpdate(x, P, y, H, R)
%LINEARPREDICTION calculates mean and covariance of predicted state
% density using a linear Gaussian model.
%
%Input:
% x [n x 1] Prior mean
% P [n x n] Prior covariance
% y [m x 1] Measurement
% H [m x n] Measurement model matrix
% R [m x m] Measurement noise covariance
%
%Output:
% x [n x 1] updated state mean
% P [n x n] updated state covariance
%
% Your code here
S=H*P*H'+R;
K=P*H'*inv(S);
v=y-H*x;;
x=x+K*v;
P=P-K*S*K';
end
```

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