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% Brownian Motion
% Antonio Rivela
% IE Business School @ Feb 2010



%%%%% Input parameters %%%%%%%%

S=100; %spot price

T=1; %maturity

r=0.05; %interest rate

sigma=0.25; %volatility

NSimulations=100000; %no of monte carlo simulations

NSteps=100; %no of time steps

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%



dt=T/(NSteps-1);



vsqrdt=sigma*dt^0.5;
```

```
drift=(r-(sigma^2)/2)*dt;

% drift=r*dt;


x=randn(NSimulations,NSteps);


Smat=zeros(NSimulations,NSteps);


Smat(:,1)=S;


for i=2:NSteps,

	Smat(:,i)=Smat(:,i-1).*exp(drift+vsqrdt*x(:,i));

end


plot(Smat(1,:))
```