Chapter 9: Electrical actuators

chapter9_2 Speed_Torque characteristics for DC motors

```
% Onwubolu, G. C.
% Mechatronics: Principles & Applications
% Elsevier
%
% Mechatronics: Principles & Applications Toolbox Version 1.0
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%
% Chapter 9: Speed_Torque characteristics for DC motors
%
% Example 9.2   MATLAB's calculating power is greatly enhanced using the
Symbolic
% Math Toolbox. In this example we demonstrate its power by deducing the
% speed_torque relations
%data
%Problem 1
%data
%Kphi=3; %volt-sec
%Vt=600;
%Ra=2;
%Ia=5; %(armature current at full load)

%input data from keyboard
Kphi=input('Flux-motor constant (volt-sec): Kphi  '); %input from keyboard
Vt=input('Source voltage (volt): Vt  '); %input from keyboard
Ra=input('Armature resistance  (ohm): Ra  '); %input from keyboard
Ia=input('Armature current: (amps): Ia  '); %input from keyboard

%computation commences
'Rated torque'
Td=Kphi*Ia
'Starting torque'
Tst=Vt*Kphi/Ra
'Starting current'
Ist=Vt/Ra
'Starting speed'
Wo=Vt/Kphi
'Speed at rated torque condition'
W=(Vt-Ra*Ia)/Kphi

'Finish'
```