

Background Assessment

9.11.06
(ungraded)

Personal Information

Last Name: _____ First Name: _____

Preferred Name/Nickname: _____ Email: _____

Highest Degree Held and field of that degree: _____

Current Department and degree currently sought: _____

Why are you interested in this course?

Experience

1. What other courses have you taken in virtual reality, human-computer interaction, computer graphics, or controls?
2. How familiar are you using with haptic displays? _____
[rate from 0 to 5: 0 = never touched one, 5 = used extensively]

Mechatronic Hardware

3. List 3 ways for sensing position, proximity or force (e.g., sonar/proximity). State which parameter each method senses.

A. method: _____ parameter: _____

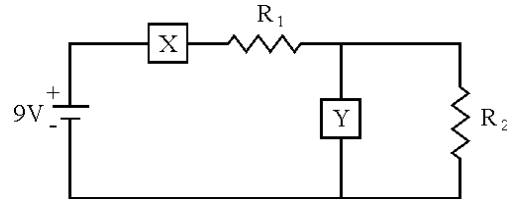
B. method: _____ parameter: _____

C. method: _____ parameter: _____

4. In the circuit diagram below, device X requires 4 V at 1.5 mA, whereas device Y operates at 2 V and 1 mA. The two devices are operated from a 9-V battery. Design the circuit, i.e. specify the values of R_1 and R_2 .

$R_1 =$ _____

$R_2 =$ _____



Programming

5. What programming languages and operating systems are you proficient in?
6. Have you ever used an I/O board (e.g. analog-to-digital converter or digital I/O) to make the computer communicate with the outside world? Describe very briefly (< 20 words).

Design and Fabrication

7. Describe briefly the most complicated thing you ever made or fixed. (Examples: rebuilt automobile engine, sewed a tailored jacket, made a lego robot.)

8. What is your level of skill in using the following tools?
[rate from 0 to 5: 0 = never touched one, 5 = highly skilled]

lathe or milling machine (CNC?) _____ soldering iron _____

router _____ hot-melt glue gun _____

band saw _____ drill press _____

Controls

9. What are the Laplace Transforms of the following, where K is a constant and x is a function of time, t ?

A. $d(Kx)/dt$ _____

B. $\int Kx dt$ _____

C. Kx _____

10. Describe the effect and/or form of the following types of control (in words, or with signal or flow chart diagrams):

A. proportional _____

B. derivative _____

C. integral _____

Statistics

12. Briefly describe the point of doing an ANOVA.