

Unit 4 Programming Problems Worksheet

Programming Problem 1 – Sports Statistics

Design and implement a set of classes that keeps track of various sports statistics. Have each low-level class represent a specific sport. Tailor the services of the classes to the sport in question, and move common attributes to the higher-level classes as appropriate. Create a main driver class to instantiate and exercise several of the classes.

Grading Rubric

Task	Points
Working solution for the problem	8
Overall best practices in writing the program	2
Total	10

Screenshots

```
Soccer team "soccer team 1", with win ratio of 0.6667 and goal ratio of 0.200000
Soccer team "soccer team 2", with win ratio of 0.2857 and goal ratio of 0.625000
Hockey team "hockey team 1", with win ratio of 0.6667 and goal ratio of 0.166667
Hockey team "hockey team 2", with win ratio of 0.6667 and goal ratio of 0.130435
```

Programming Problem 2 – Reading Materials

Design and implement a set of classes that define various types of reading material: books, novels, magazines, technical journals, textbooks, and so on. Include data values that describe various attributes of the material, such as the number of pages and the names of the primary characters. Include methods that are named appropriately for each class and that print an appropriate message. Create a main driver class to instantiate and exercise several of the classes.

Grading Rubric

Task	Points
Working solution for the problem	8
Overall best practices in writing the program	2
Total	10

Screenshots

```
Computer Science Text Book: Intro to java(300 pages) by: Y. Daniel Liang
Novel: Through the Looking Glass(230 pages) by: Lewis Carroll - chars: [Alice]
Bell System Journal: (50 pages) by: Bell Labs - pub. Something inc.
Magazine: (60 pages) by: J. Nanjan, Mike Miller, Iban Coello, Brian Buccellato - pub. DC Comics - Issue 30
```

Programming Problem 3 - Courses

Design and implement a set of classes that define various courses in your curriculum. Include information about each course such as the title, number, description, and department that teaches the course. Consider the categories of classes that constitutes your curriculum when designing your inheritance structure. Create a main driver class to instantiate and exercise several of the classes.

Grading Rubric

Task	Points
Working solution for the problem	8
Overall best practices in writing the program	2
Total	10

Screenshots

```
ENG 111 (dep. Language and Literature)
PLS 120 (dep. Liberal Arts)
EGR 126 (dep. Mathematics, Science, and Engineering)
CSC 201 (dep. Business and Public Services)
```

Programming Problem 4 – Electronic Equipment

Design and implement a set of classes that define various types of electronics equipment (computers, cell phones, pagers, digital cameras, etc.). Include data values that describe various attributes of the electronics, such as the weight, cost, power usage, and the names of the manufacturers. Include methods that are named appropriately for each class and that print an appropriate message. Create a main driver class to instantiate and exercise several of the classes.

Grading

Task	Points
Working solution for the problem	8
Overall best practices in writing the program	2
Total	10

Screenshots

```
RPi(Computer):
  Processor:      ARMv7
  Cost:           $ 0.00
  Mass:           0.00
  Power Usage:    0.0000 kW h
  Manufacturers:
    South Wales
    Element14
    Premier Farnell

70d(Digital Camera):
  Number of Photos: 0
  Cost:             $ 0.00
  Mass:             0.00
  Power Usage:      0.0000 kW h
  Manufacturers:
    Canon

Generic Brand(Pager):
  Pager Number:    0
  Cost:            $ 0.00
  Mass:            0.00
  Power Usage:     0.0000 kW h
  Manufacturers:
    Everyone

Nexus(Cell Phone):
  Phone Number:    1234567890
  Cost:            $ 0.00
  Mass:            0.00
  Power Usage:     0.0000 kW h
  Manufacturers:
    Samsung
```