

IS MSc Artificial Intelligence Programming II

Exercise 3

Issued: week 3

January 16, 2002

1. Write a procedure called **convert** that takes two arguments. Its first argument should be an amount in pounds, and its second should be a rate of exchange. The result should be the amount after applying the rate of exchange. For example:

To see how many Francs you get for 85 pounds @ 9.5 Francs per pound

```
convert(85, 9.5) =>
```

2. What does the following compute and print and why?

```
convert(convert(85, 9.5), 1/9.5) =>
```

3. (a) Write a procedure called **second1** that given any list of at least two elements returns the second element of that list, e.g.

```
second1([a b c d e]) =>
```

```
** b
```

- (b) Write another version called **second2** that produces the same result but in a different way.

4. Write a procedure called **twobites** that given any list of at least two elements as its argument returns a list consisting of the first two elements of that list e.g.

```
twobites([a b c d e]) =>
```

```
** [a b]
```

5. Write a procedure called **cube** that takes a numerical value as argument and returns its cube, e.g.

```
cube(4) =>
```

```
** 64
```

6. (a) Using **cube** as sub-procedure, write a procedure called **tenth1** that takes a numerical value and returns its 10th power e.g.

```
tenth1(2) =>
```

```
** 1024
```

- (b) write another version called **tenth2** that produces the same result without using **cube** as a sub-procedure.

7. Explain the difference between the following two procedures:

```

define test1(x, y);
  lvars z;
  x + y -> z;
  z =>
enddefine;

define test2(x, y) -> z;
  x + y -> z;
enddefine;

```

8. Explain what is produced by each => print arrow and why

```

vars z;
8 -> z;
z =>

define test1(x, y);
  z =>
  x + y -> z;
  z =>
enddefine;

test1(2,3);

z =>
x =>

```

9. Explain what is produced by each => print arrow and why

```

vars z;
8 -> z;
z =>

define test1(x, y);
  lvars z;
  z =>
  x + y -> z;
  z =>
enddefine;

test1(7,2);
z =>

```