

Task 1: Mimic the “Basic Forms” demo

CL-USER> 496

496

CL-USER> "Common Lisp with objects"

"Common Lisp with objects"

CL-USER> pie

Enter a form to be evaluated: pi

3.141592653589793d0

CL-USER> pi

3.141592653589793d0

CL-USER> (+ pi 496)

499.1415926535898d0

CL-USER> (+ 2 3 5 7)

17

CL-USER> (* (+ 3 6 9) (- 8 5))

54

CL-USER> (double 5)

; in: DOUBLE 5

; (DOUBLE 5)

;

; caught STYLE-WARNING:

; undefined function: SB-ALIEN:DOUBLE

;

; compilation unit finished

; Undefined function:

; DOUBLE

; caught 1 STYLE-WARNING condition

; Evaluation aborted on #<SB-KERNEL::RETRY-UNDEFINED-FUNCTION DOUBLE {1003B517A3}>.

CL-USER> (quote pie)

; in: QOUTE PIE

; (QOUTE PIE)

;

; caught WARNING:

; undefined variable: COMMON-LISP-USER::PIE

;

```
; caught STYLE-WARNING:
; undefined function: COMMON-LISP-USER::QOUTE
;
; compilation unit finished
; Undefined function:
; QOUTE
; Undefined variable:
; PIE
; caught 1 WARNING condition
; caught 1 STYLE-WARNING condition
; Evaluation aborted on #<UNBOUND-VARIABLE PIE {1003D15813}>.
CL-USER> (quote pie)
PIE
CL-USER> '(double 5)
(DOUBLE 5)
CL-USER> ( setf dozen 12)
; in: SETF DOZEN
; (SETF DOZEN 12)
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::DOZEN
;
; compilation unit finished
; Undefined variable:
; DOZEN
; caught 1 WARNING condition
12
CL-USER> dozen
12
CL-USER> (defun double (x) (* x 2 ))
DOUBLE
CL-USER> (double 5)
10
CL-USER> (double pi)
6.283185307179586d0
CL-USER> (double pie)
; Evaluation aborted on #<UNBOUND-VARIABLE PIE {1004116EB3}>.
```

CL-USER>

Task 2: Mimic the “Numeric Forms” Demo

CL-USER> (+ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20)

210

CL-USER> (/ (* 20 21) 2)

210

CL-USER> (+)

0

CL-USER> (*)

1

CL-USER> (+ 1 2 3)

6

CL-USER> (* 1 2 3)

6

CL-USER> (- 1 2 3)

-4

CL-USER> (/ 1 2 3)

1/6

CL-USER> (mod 15 2)

1

CL-USER> (mod 15 4)

3

CL-USER> (mod 4 15)

4

CL-USER> (sqrt 100)

10.0

CL-USER> (sqrt 2)

1.4142135

CL-USER> (expt 7 60)

508021860739623365322188197652216501772434524836001

CL-USER> (* 2 pi 10)

62.83185307179586d0

CL-USER> (* pi (expt 17.2 2))

929.4088550069478d0

CL-USER> (- (* pi (expt 17.2 2)) (* pi (expt 15 2)))

222.55050794924432d0

CL-USER>

Task 3: Solve the “White Percent of a Standard Die” problem

File:

```
(setf edge-length 3.25)
```

```
(setf side-area (* edge-length edge-length) )
```

```
(setf die-area (* side-area 6) )
```

```
(setf dot-diameter (* edge-length (/ 1 5)))
```

```
(setf dot-radius (/ dot-diameter 2))
```

```
(setf dot-area (* pi (* dot-radius dot-radius)))
```

```
(setf total-dots (+ 1 2 3 4 5 6))
```

```
(setf total-dot-area (* total-dots dot-area))
```

```
(setf percentage-of-dot (* (/ total-dot-area die-area) 100))
```

```
(setf percentage-of-white (- 100 percentage-of-dot))
```

CLISP:

```
CL-USER> (load "dots.lisp")
```

T

```
CL-USER> edge-length
```

3.25

```
CL-USER> side-area
```

10.5625

```
CL-USER> die-area
```

63.375

```
CL-USER> dot-diameter
```

0.65000004

```
CL-USER> dot-radius
```

0.32500002

```
CL-USER> dot-area
```

0.33183075867732204d0

```
CL-USER> total-dots
```

21

```
CL-USER> total-dot-area
6.968445932223763d0
CL-USER> percentage-of-dot
10.995575435461559d0
CL-USER> percentage-of-white
89.00442456453844d0
CL-USER>
```

Task 4: Solve the “Tethered Goat” problem

```
CL-USER> (load "goat.lisp")

; file: c:/home/goat.lisp
; in: SETF ROPE-LENGTH
; (SETF ROPE-LENGTH 88)
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::ROPE-LENGTH
;
; compilation unit finished
; Undefined variable:
; ROPE-LENGTH
; caught 1 WARNING condition

; file: c:/home/goat.lisp
; in: SETF BARN-LENGTH
; (SETF BARN-LENGTH 62)
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::BARN-LENGTH
;
; compilation unit finished
; Undefined variable:
; BARN-LENGTH
; caught 1 WARNING condition

; file: c:/home/goat.lisp
```

```
; in: SETF BARN-WIDTH
; (SETF BARN-WIDTH 44)
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::BARN-WIDTH
;
; compilation unit finished
; Undefined variable:
; BARN-WIDTH
; caught 1 WARNING condition

; file: c:/home/goat.lisp
; in: SETF POTENTIAL-GRAZE-AREA
; (SETF POTENTIAL-GRAZE-AREA (* PI (EXPT ROPE-LENGTH 2)))
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::POTENTIAL-GRAZE-AREA

; (EXPT ROPE-LENGTH 2)
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::ROPE-LENGTH
;
; compilation unit finished
; Undefined variables:
; POTENTIAL-GRAZE-AREA ROPE-LENGTH
; caught 2 WARNING conditions

; file: c:/home/goat.lisp
; in: SETF STRAIGHT-ROPE-GRAZE-AREA
; (* POTENTIAL-GRAZE-AREA 0.75)
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::POTENTIAL-GRAZE-AREA

; (SETF STRAIGHT-ROPE-GRAZE-AREA (* POTENTIAL-GRAZE-AREA 0.75))
;
```

```
; caught WARNING:
; undefined variable: COMMON-LISP-USER::STRAIGHT-ROPE-GRAZE-AREA
;
; compilation unit finished
; Undefined variables:
; POTENTIAL-GRAZE-AREA STRAIGHT-ROPE-GRAZE-AREA
; caught 2 WARNING conditions
```

```
; file: c:/home/goat.lisp
; in: SETF TOP-GRAZE-AREA-RADIUS
; (- ROPE-LENGTH BARN-WIDTH)
;
```

```
; caught WARNING:
; undefined variable: COMMON-LISP-USER::BARN-WIDTH
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::ROPE-LENGTH
```

```
; (SETF TOP-GRAZE-AREA-RADIUS (- ROPE-LENGTH BARN-WIDTH))
;
```

```
; caught WARNING:
; undefined variable: COMMON-LISP-USER::TOP-GRAZE-AREA-RADIUS
;
; compilation unit finished
; Undefined variables:
; BARN-WIDTH ROPE-LENGTH TOP-GRAZE-AREA-RADIUS
; caught 3 WARNING conditions
```

```
; file: c:/home/goat.lisp
; in: SETF SIDE-GRAZE-AREA-RADIUS
; (- ROPE-LENGTH BARN-LENGTH)
;
```

```
; caught WARNING:
; undefined variable: COMMON-LISP-USER::BARN-LENGTH
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::ROPE-LENGTH
```

```
; (SETF SIDE-GRAZE-AREA-RADIUS (- ROPE-LENGTH BARN-LENGTH))
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::SIDE-GRAZE-AREA-RADIUS
;
; compilation unit finished
; Undefined variables:
;   BARN-LENGTH ROPE-LENGTH SIDE-GRAZE-AREA-RADIUS
; caught 3 WARNING conditions

; file: c:/home/goat.lisp
; in: SETF TOTAL-TOP-GRAZE-AREA
;   (EXPT TOP-GRAZE-AREA-RADIUS 2)
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::TOP-GRAZE-AREA-RADIUS

; (SETF TOTAL-TOP-GRAZE-AREA (* PI (EXPT TOP-GRAZE-AREA-RADIUS
2)))
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::TOTAL-TOP-GRAZE-AREA
;
; compilation unit finished
; Undefined variables:
;   TOP-GRAZE-AREA-RADIUS TOTAL-TOP-GRAZE-AREA
; caught 2 WARNING conditions

; file: c:/home/goat.lisp
; in: SETF TOTAL-SIDE-GRAZE-AREA
;   (EXPT SIDE-GRAZE-AREA-RADIUS 2)
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::SIDE-GRAZE-AREA-RADIUS
```



```
; (SETF TOTAL-SIDE-GRAZE-AREA (* PI (EXPT SIDE-GRAZE-AREA-RADIUS
2)))
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::TOTAL-SIDE-GRAZE-AREA
;
; compilation unit finished
; Undefined variables:
; SIDE-GRAZE-AREA-RADIUS TOTAL-SIDE-GRAZE-AREA
; caught 2 WARNING conditions

; file: c:/home/goat.lisp
; in: SETF ACTUAL-TOP-GRAZE-AREA
; (SETF ACTUAL-TOP-GRAZE-AREA (/ TOTAL-TOP-GRAZE-AREA 4))
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::ACTUAL-TOP-GRAZE-AREA

; (/ TOTAL-TOP-GRAZE-AREA 4)
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::TOTAL-TOP-GRAZE-AREA
;
; compilation unit finished
; Undefined variables:
; ACTUAL-TOP-GRAZE-AREA TOTAL-TOP-GRAZE-AREA
; caught 2 WARNING conditions

; file: c:/home/goat.lisp
; in: SETF ACTUAL-SIDE-GRAZE-AREA
; (SETF ACTUAL-SIDE-GRAZE-AREA (/ TOTAL-SIDE-GRAZE-AREA 4))
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::ACTUAL-SIDE-GRAZE-AREA

; (/ TOTAL-SIDE-GRAZE-AREA 4)
;
;
```

```

; caught WARNING:
; undefined variable: COMMON-LISP-USER::TOTAL-SIDE-GRAZE-AREA
;
; compilation unit finished
; Undefined variables:
;  ACTUAL-SIDE-GRAZE-AREA TOTAL-SIDE-GRAZE-AREA
; caught 2 WARNING conditions

; file: c:/home/goat.lisp
; in: SETF ANSWER
; (SETF ANSWER
;   (+ STRAIGHT-ROPE-GRAZE-AREA TOTAL-TOP-GRAZE-AREA
;     TOTAL-SIDE-GRAZE-AREA))
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::ANSWER

; (+ STRAIGHT-ROPE-GRAZE-AREA TOTAL-TOP-GRAZE-AREA
TOTAL-SIDE-GRAZE-AREA)
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::STRAIGHT-ROPE-GRAZE-AREA
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::TOTAL-SIDE-GRAZE-AREA
;
; caught WARNING:
; undefined variable: COMMON-LISP-USER::TOTAL-TOP-GRAZE-AREA
;
; compilation unit finished
; Undefined variables:
;  ANSWER STRAIGHT-ROPE-GRAZE-AREA TOTAL-SIDE-GRAZE-AREA
TOTAL-TOP-GRAZE-AREA
; caught 4 WARNING conditions
T
CL-USER> rope-length

```

```
CL-USER> barn-length
62
CL-USER> barn-width
44
CL-USER> potentail-graze-area
; Evaluation aborted on #<UNBOUND-VARIABLE POTENTAIL-GRAZE-AREA
{10038017A3}>.
CL-USER> potentail-graze-area
; Evaluation aborted on #<UNBOUND-VARIABLE POTENTAIL-GRAZE-AREA
{1003AFA073}>.
CL-USER> potential-graze-area
24328.49350939936d0
CL-USER> straight-rope-graze-area
18246.37013204952d0
CL-USER> top-graze-area-radius
44
CL-USER> side-graze-area-radius
26
CL-USER> total-top-graze-area
6082.12337734984d0
CL-USER> total-side-graze-area
2123.7166338267d0
CL-USER> actual-top-graze-area
1520.53084433746d0
CL-USER> actual-side-graze-area
530.929158456675d0
CL-USER> answer
26452.21014322606d0
CL-USER>
```