

1. Event and Scheduling Patterns

1.A.

```
def activity(i)
  display "activity", i
  sched_cause(0.5, nil, 'activity', i + 1)
```

1.B.

```
display "debugging", middle_c + 12, log(E)
```

1.C.

```
def activity(i)
  if (i <= 20)
    display "activity", i
    sched_cause(0.5, nil, 'activity', i + 5)
```

1.D.

```
player_id = 0
```

```
def activity(i, id)
  if (player_id != id) {
    return
  }
  display "activity", i
  sched_cause(0.5, nil, 'activity', i + 1, id)
```

```
def startit(rest ignore)
  player_id = player_id + 1
  sched_cause(0.5, nil, 'activity', 0, player_id)
```

```
def stopit(rest ignore)
  player_id = player_id + 1
```

1.E.

```
button = Button(0, "Play", 5, 5, 100, 20)
button.method = 'play'
pitch = Slider(0, 20, 100, 60, 5, 30, 200, 20)

def play(rest ignore):
    var p = int(pitch.value())
    sched_cause(0, midi_out, 'note_on', 0, p, 100)
    sched_select(rtsched)
    sched_cause(1, nil, 'note_off', p)

def note_off(p)
    midi_out.note_on(0, p, 0)
```

1.F.

```
def activity(i):
    time_sleep(random() * 0.2)
    // show how far behind schedule we are now:
    display "behind by", time_get() - rtsched.time
    sched_cause(absolute(rtsched.time), nil, 'activity', i + 1)
```

Formal Grammars

1.

abc
aabcbc
aaabcbcbc

2.

$a^i b^j a^i$ such that $j \geq 1$ and $i \geq 0$

Music Theory and Reading

1. 2 sharps
2. 4/4

3. 4 beats
4. Most freq used is 8th note
5. Longest duration is a half note
6. Shortest duration is 16th note.
7. D4 F#4 A4 D5 D5
8. 32 seconds
9. +4, +3, +5, +2, -2, -1, +3, +2, -2, -3, -4, +2, +2

Algorithmic Composition

D F# A D D
 D F# A D E D C#
 E F# E C# A B C#
 D C# B A G F# E

D F# A D D
 D F# A D E D C#
 E F# E C# A B C#
 D E D C# D

1.

D-> D:5, E:3, F#:4, C#:4
 E -> D:4, F#:2, C#:2
 F# -> E:3, A:4
 G -> F#:1
 A -> D:4, B:2, G:1
 B -> C#:2, A:1
 C# -> A:2, B:1, D:3, E:2

2. F# A D D D
3. D D F# C# D
4. 0 2 5 0 9 5 2 7 11 4 7 9
5. 11 2 4 1 9 6 2 7 11 4 7 9

Elowsson and Friberg Reading

1. d) Interval size tends to be longer as durations get longer
2. c) Intervals of 7 scale steps are more common than intervals of 4 scale steps.
3. b) About 10

