Affra walks Qiana through the composition of a modest melodic sequence, and then challenges her to compose a little something of her own – subject to a particular set of constraints.

**Affra:** Do you think we should write a little tune?

**Qiana:** Sure. How?

**Affra:** Why don’t you start by writing an invariant macro called \( \langle A1 \rangle \) to play \( \langle C / G.5 \ \ F.5 \ \ E \ \ D \rangle \).

**Qiana:** OK.

**Affra:** Don’t forget to properly test it! A good test would be \( \langle P \ A1 \ P \rangle \). If the notes played on either side of the macro are the same, then A1 is invariant!

**Qiana:** Check! I tested it. Life is good!

**Affra:** Next, write (and test!) an invariant macro called \( \langle A2 \rangle \) to play \( \langle C / D2 \ \ G \rangle \).

**Qiana:** Got it.

**Affra:** One more. This one is really simple! Write (and test) an invariant macro called \( \langle A3 \rangle \) to play \( \langle C4 \rangle \).

**Qiana:** OK.

**Affra:** Now we are going to sequence these three macros in a couple of ways.

**Qiana:** OK.

**Affra:** First, define \( \langle AA >> A1 \ A2 \ A1 \ A3 \rangle \) and give \( \langle AA \rangle \) a listen.

**Qiana:** Not bad.

**Affra:** Next, define \( \langle AB >> A1 \ A2 \ A2 \ A3 \rangle \) and give \( \langle AB \rangle \) a listen.

**Qiana:** Again, not bad.

**Affra:** I hope you weren’t expecting a greatest hit. The idea is merely to suggest an approach to putting together a simple melodic line.

**Qiana:** Can we finish it?

**Affra:** Absolutely. Go for it!
Qiana: Short pause. How about simply putting them together?

Affra: Sounds good.

Qiana: What should I call the tune?

Affra: “Thing1”, I think.

Qiana: OK. ⟨THING1 >> AA AB⟩. Then ⟨THING1⟩ ⇒ ⟨C1 / G.5 \ F.5 \ E1 D1 \ C1 / D2 \ G1 / C1 / G.5 F.5 E1 D1 C4 C1 / G.5 \ F.5 \ E1 D1 \ C1 / D2 \ G1 / C1 / D2 \ G1 / C4⟩.

Affra: Not bad?

Qiana: Not bad!

Affra: Take a look at the program. Type ⟨- DISPLAY(THING1)⟩ into the text input box.

Qiana: I like it. I like to see the structure of the composition.

Affra: Are you ready?

Qiana: For what?

Affra: “Thing2”, of course!

Qiana: OK ...

Affra: Define and test an invariant macro called ⟨B1⟩ which produces a “melodic line” of duration 3 beats consisting of 5 notes soundings over a 3 note palette.

Qiana: OK.

Affra: Define and test an invariant macro called ⟨B2⟩ which produces a “melodic line” of duration 3 beats consisting of 7 notes soundings over a 4 note palette.

Qiana: OK.

Affra: Define and test an invariant macro called ⟨B3⟩ which produces a “melodic line” of duration 3 beats consisting of 2 notes soundings over a 2 note palette. Moreover, arrange for the last (second) note sounded to be the pitch that would be sounded before the program is run.

Qiana: Got it. What now?

Affra: First, define ⟨BA >> B1 B2 B3⟩. And play ⟨BA⟩.

Affra: Second, define ⟨BB >> 2RP B2 LP B2 LP B2⟩. And play ⟨BB⟩.
Affra: Third, define \( \langle \text{THING2} \rangle \text{ BA BB BA } \). Give \( \langle \text{THING2} \rangle \) a listen! Take a look!

Qiana: Did I compose that little melody?

Affra: You. And me. And MxM! A nice example of what they call “distributed cognition”!