DVD Monsoon 2025 - Weekly Quiz 7

Total points 8/9

This quiz is based entirely on the **sessions conducted by Mr. Ashu Talwar** and covers core and advanced topics from the **SKILL** and **AWK** programming languages.

The respondent's email (**abhinav23024@iiitd.ac.in**) was recorded on submission of this form.

✓ AWK Code executing in Gawk distribution is shown below: * 1/1

```
awk 'BEGIN{
   print "data" |& "cat"
   "cat" |& getline x
   print x
}'
```

What will be the output(s)?

- [ ] Deadlock
- [ ] Empty line
- [ ] Implementation Dependent
- [x] data ✓

Feedback

Reason: The first print sends data to pipe buffer, but no newline flushes immediately; second getline waits for remote process to emit data deadlock unless implementation auto-flushes (GNU awk doesn't).

✓ For the following AWK code executed in Linux OS: * 1/1

echo "1 2 3" | awk '{NF=2; $1=$1; print $0, NF}'

What will be the Output(s)?

- [ ] 1 2 3 2
- [x] 1 2 2 ✓
- [ ] Undefined
- [ ] 1 2

Feedback

Reason: NF=2 truncates fields. $1=$1 triggers rebuild “1 2”. Then prints $0 and NF (2).

✓ Suppose you are parsing a file named 'file.txt' with file contents given as: *2/2

A:B:C
D:E:F
G:H:I

For parsing the file and doing quick text manipulations you use AWK as a tool and execute the following command:

awk 'NR==2{RS=":"} {print $1} END{print NR}' file.txt

What is the expected output(s) ?

- [ ] A D G 3
- [x] Undefined Behavior ✓
- [ ] A D G 6
- [ ] A D G 9

✓ You are doing a design automation using the following SKILL code: *1/1

```
cv = geGetEditCellView()
inst = car(geGetSelSet())
inst~>bBox
```

If you select an instance inside the top cell and run this in the CIW, what do you get?

- [ ] Error: bbox slot not valid for instance headers.
- [x] The instance's untransformed bbox (local to its master). ✓
- [ ] The instance's transformed bbox (absolute coordinates).
- [ ] A list of points in the master coordinate frame.

Feedback

Reason: inst~>bBox reports the bounding box in the master's coordinates, not top-level. To get absolute coords, use dbTransformBBox(inst~>bBox inst~>transform).

✓ You've been asked to write a SKILL script that runs a **DRC check automatically** on *all layout cells* in a library named ***"myAnalogLib"***, using the active techfile's default DRC rules. Your initial code looks like this: *2/2

```
procedure(runBatchDRC(libName)
 let( (lib cells cv drcResult)
  lib = ddGetObj(libName)
  cells = lib~>cells
  foreach(cell cells
   cv = dbOpenCellViewByType(cell "layout" "" "r")
   drcResult = drcRun(cv)
   printf("Checked %s : %s\n" cell~>name drcResult)
   dbClose(cv)
  )
 )
)
```

After running ***runBatchDRC("myAnalogLib")***, you observe that Only a few cells are processed, Several DRC runs hang indefinitely, Virtuoso sometimes crashes or leaves layout views open in memory.

What are the possible root causes? (Choose all that apply)

- [x] drcRun() is a GUI-blocking call and cannot be used in batch SKILL context. ✓
- [x] foreach runs synchronously but does not wait for asynchronous DRC results to complete. ✓
- [x] The code doesn't check whether each layout actually has a DRC view or valid techfile association before running DRC. ✓
- [ ] dbOpenCellViewByType(... "r") opens the layout in read-only mode, preventing DRC execution.
- [ ] Layouts remain open in memory because dbClose() only marks them "dirty" but doesn't close asynchronous handles.

Feedback

Reason: (A) drcRun() is an interactive function intended for use with the Virtuoso GUI; it opens DRC forms and waits for user action. For automation, you must use

lxRunDrdCheck() or asiRunDRC(), depending on the environment (Layout XL vs Virtuoso Layout Suite).

(C) Even if DRC runs, it executes asynchronously. Without checking completion (ipcWait, lxWaitForJob), the loop continues before the previous run finishes.

(E) Not all layouts have valid rule decks or tech associations; attempting to run DRC blindly causes tool hangups.

✓ For given SKILL code snippet: * 1/1

```
techGetMfgGrid(cv~>techFile)
dbCreateRect(cv '("M1" "drawing") list(0.1:0.1 0.15:0.2))
```

Assume tech grid = 0.005 µm.

Which statement is/are true?

- [ ] The command fails with off-grid error.
- [x] The rectangle snaps silently to grid multiples. ✓
- [x] Coordinates are converted to database units (1/1000 µm). ✓
- [ ] It stores exact floating-point coordinates.

Feedback

Reason: SKILL always stores in database units (e.g., 1 DBU = 1 nm) and silently rounds to nearest valid grid point.

✗ Suppose the following code is executed in Linux OS with GAWK distribution. *0/1

echo "1 2 3" | awk '{delete $2; print NF,$0}'

What is/are the possible output?

- [ ] Implementation Dependent
- [x] 2 1 3 ✗
- [ ] 3 1 3
- [x] 3 1 3 (double space) ✗

Correct answer

- [x] Implementation Dependent