Unit 8 · A Project in a Team

WORKSHEET

Full marks 26

Name _____ Class _____ Roll no. ____ Date _____ Marks _____ / 26

1 Key words [4]

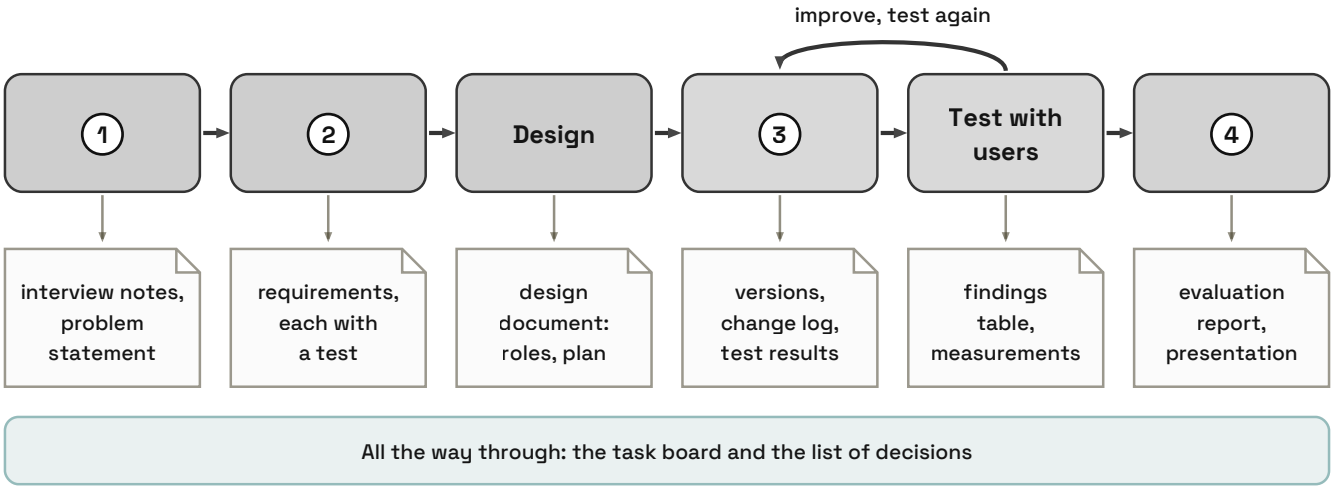
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

change log	**consequence scanning**	**dependency**	**design document**	**functional requirement**
interface	**lost update**	**problem statement**	**quality requirement**	**task board**

A sentence that names a user and a need, never a solution, is a _____. A requirement that says what the product must do is a _____; one that says how well it must do it, or in what conditions, is a _____. A short, shared description of what a team will build and how, which every member has agreed to, is a _____. The agreement on exactly how two parts of a program meet, such as a function's name, what it is given and what it gives back, is an _____. A task that must be finished before another can start is a _____ of that task. A board with the columns To do, Doing and Done is a _____. When two people change copies of the same file and the second one saved wipes out the first, it is a _____.

2 Label the diagram [2]

The diagram shows a team's workflow, and what each step leaves behind. Write the name of the step in place of 1 to 4. Each carries 0.5 mark.



1. _____ 2. _____

3. _____ 4. _____

3 Multiple choice [5]

Choose the correct option for each of the following questions.

i. Which of these is a **quality requirement**? [1]

a. Work out each farmer's total for 15 days.

b. Print a slip for each farmer.

c. A day's 120 deliveries can be entered in under 20 minutes.

d. Refuse a fat reading of 42.

ii. Ritu's `slips.py` calls Bikash's `totals()`, which he hasn't finished. What lets Ritu build her part now? [1]

a. Nothing: she must wait until he finishes.

b. She writes her own copy of `totals()` the way she thinks it should work.

c. The interface in the design document: the function's name, what it is given and what it gives back, in what units.

d. Bikash tells her what he plans, and she remembers it.

iii. Bikash says his payments module is "done". It works, but he hasn't run the old tests or written the change. Which column should its card be in? [1]

a. Done: it works.

b. Doing: the team's meaning of done also needs the old tests passing, the change log written and a teammate's reading.

c. To do: it has to start again.

d. It should come off the board.

iv. The chairman asks for the program to cut a farmer's pay automatically when their fat reading drops. What is the responsible response? [1]

a. Build it: the chairman is in charge.

b. Refuse, and do nothing about watered milk.

c. Have the program point out sudden drops, so that a person asks the farmer and decides.

d. Hide the fat readings from the secretary.

v. A team has eight saved versions. Version 1 passes a test and version 8 fails it. Testing the middle version first, what is the most runs needed to find the first failing version? [1]

a. 1 **b.** 3

c. 7 **d.** 8

4 What kind of line is it? [3]

A team is writing the requirements for an app that tells students when their next exam is. Write F (functional requirement), Q (quality requirement) or N (not a requirement: a design choice, or a wish nobody can test) after each line. Each carries 0.5 mark.

i. The app shows each student's next exam: its date, time and room.
ii. A student who has never seen the app finds their next exam in under 30 seconds, without help.
iii. The app should look modern.
iv. It works with no internet, from the last timetable it saved.
v. A teacher can add a new exam to the timetable.
vi. The buttons are blue.

5 Find the bug [4]

Read the program, then answer.

This is version 5 of the milk team's `totals()`, after Bikash "made it shorter". One delivery earns liters × fat × 15 rupees.

```
RATE = 15

def payment(liters, fat):
    return liters * fat * RATE

def totals(rows, start, end):
    result = {}
    for date, session, farmer, liters, fat in rows:
        if start <= date <= end:
            old = result.get(farmer, [0, 0])
            result[farmer] = [old[0] + liters, payment(liters, fat)]
    return result

rows = [("2083-10-01", "M", 12, 3.0, 4.0),
        ("2083-10-01", "E", 12, 2.0, 4.5),
        ("2083-10-01", "M", 7, 5.0, 3.6)]
got = totals(rows, "2083-10-01", "2083-10-15")
for farmer in got:
    print(farmer, round(got[farmer][0], 1), round(got[farmer][1]))
```

i. Write what the program prints.

```
OUTPUT
```

ii. Which farmer's payment is wrong? Work out what it should be, and say which line is wrong and why.

iii. Write the corrected line.

6 Rounding once, or every time? [3]

Work it out in the space below.

A farmer brings 2.3 liters of milk at 3.7% fat every morning for 15 days. The cooperative pays Rs 15 a liter for each 1% of fat. Version 1 of the slips rounded each delivery to the nearest rupee, then added. Kamala didi adds the exact amounts, then rounds once. What does each way give, and which does requirement R3 now ask for?

Answer:

7 Tasks that wait for each other [3]

Read the plan, then answer.

A team's tasks each take one week. A: interview the user. B: write the design document (needs A). C: paper sketches with the user (needs B). D: the payments module (needs B). E: the entry screen (needs C). F: test with users (needs D and E). G: design the AI idea (needs B).

i. What is the earliest the project can finish?
ii. Write the longest chain of tasks.
iii. Which tasks can move without making the project late?

8 Think [2]

Think, then answer.

The milk program's version 2 passes all six tests, and Kamala didi likes it. Is the product finished? Give two reasons for your answer.

9 Activity: Scan the consequences (not marked)

Your school plans a camera that recognizes students' faces and marks attendance by itself. In a group, run a consequence scan: for each group of people, what could they gain, what could they lose, and how could the harm be reduced?

Who	Could gain	Could lose	How to reduce the harm
Students			
Teachers			
Students the camera misses or mistakes			
Parents			