Question 2. In this question, events are given during the execution of a *grading* program. You are supposed to understand the process state transition and fill out those blanks and choose the right options. Hint: state transition occurs when some particular events happen. Please use one of *ready, running, waiting* states as the possible state for the process. When you need to determine the running mode, please use either *user* or *kernel.*[Please check and understand these concepts through reading either from the slides or textbook] [19 points: one for each cell in the answer table]

```
intexam_grade (int m1, int m2, int m3)
{
 intexam_sum;
 exam_sum = 0.3*m1 + 0.5*m2 + 0.2*m3;
 returnexam_sum;
}
```

-- **Event:** user runs the program, the process is in **Q1** _**running**_ state.

```
main ()
{
```

-- **Event:** when scheduler chooses this program to run→**Q2**, the process is in __**ready**__state and in [ ] user [X] kernel mode. (**Q3**, please choose the right mode from the above options)

```
for (i=1; i<=24; i++)
{ scanf ("%d %d %d", &t1, &t2, &t3);
```

-- **Event:** I/O statement →**Q4**, the process is in __**waiting**__ state. Before state transition, switch to [X] user [ ] kernel mode to handle scanf. (**Q5**, please choose the correct mode).

Q6, in the multiprogramming environment, will the OS switch to execute another process? Yes [**YES**] No [ ]

-- **Event:** I/O is done, I/O device sends an interrupt. Interrupt makes the current running process stops temporarily.**Q7**,CPU switches to interrupt handler and puts this process to ___**ready**___ state. CPU continues to execute the original running process (we are assuming non-preemptive scheduling is used)

-- **Event:** scheduled to run →This process runs. (There is a context switch)

```
scanf ("%d %d %d ", &P1, &P2, &P3);
scanf ("%d %d %d", &m1, &m2, &m3);
scanf ("%d %d %d %d", &h1, &h2, &h3, &h4);
```

-- **Event:** I/O statement →**Q8**, the process is in ___**waiting**___ state.

-- **Event:** I/O completion →**Q9**, the process is in ____**ready**____ state.

-- **Event:** scheduled to run → running (context switch)

```
Project_total = (P1+P2+P3);
Homework_total = (h1+h2+h3+h4) / 4;
Exam_total = exam_grade(m1, m2, m3);
```

-- **Event:** procedure call, the process is in ___**running**___ state and