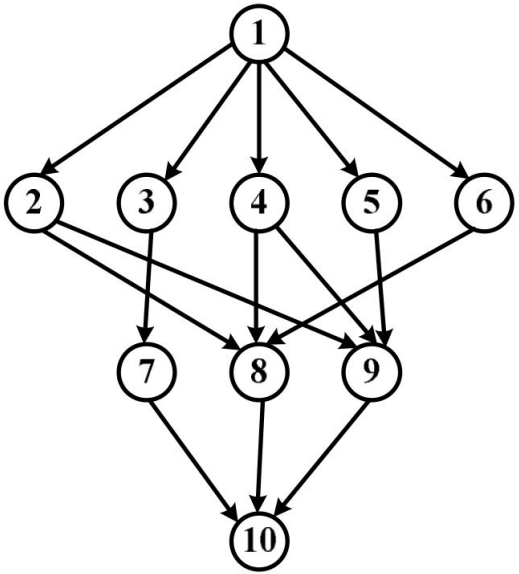
Task Scheduling

EECE 7205 Project 2

002308504 Yu Rong Kao

Input #1 – Fig 1 from the paper



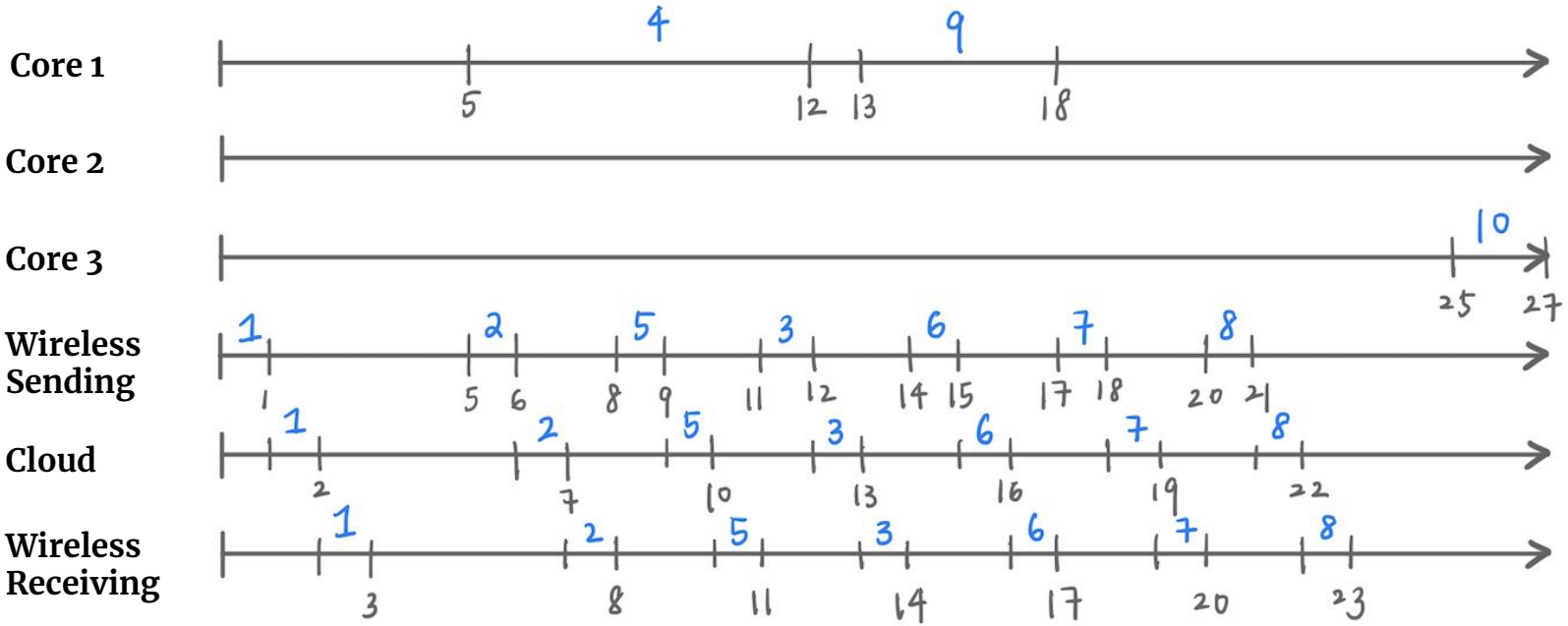
Task	Core1	Core2	Core3
1	9	7	5
2	8	6	5
3	6	5	4
4	7	5	3
5	5	4	2
6	7	6	4
7	8	5	3
8	6	4	2
9	5	3	2
10	7	4	2

$$1 \le i \le N, \begin{cases} T_i^s = 3 \\ T_i^c = 1 \\ T_i^r = 1 \end{cases}$$

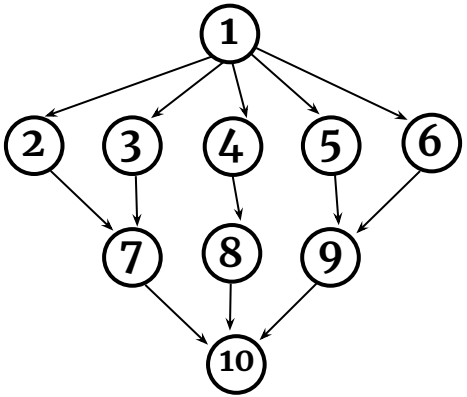
Input #1 – Output

```
ritak@yurongkaos-MacBook-Pro Project 2 % ./input_1
Task scheduling result by the initial task scheduling algorithm:
Core1: 5-12 for Task4;
Core2: 5-11 for Task6; 13-16 for Task8;
Core3: 0-5 for Task1; 5-9 for Task3; 9-11 for Task5; 11-14 for Task7; 14-16 for
Task9; 16-18 for Task10;
wireless sending : 5-8 for Task2;
Cloud: 8-9 for Task2;
wireless receiving : 9-10 for Task2;

Energy Consumption of initial scheduling: 100.5   Total Completion Time: 18


Task scheduling result by the MCC task scheduling algorithm:
Core 1: 5-12 for Task4; 13-18 for Task9;
Core 2:
Core 3: 25-27 for Task10;
wireless sending : 0-1 for Task1; 5-6 for Task2; 8-9 for Task5; 11-12 for Task3;
 14-15 for Task6; 17-18 for Task7; 20-21 for Task8;
Cloud: 1-2 for Task1; 6-7 for Task2; 9-10 for Task5; 12-13 for Task3; 15-16 for
Task6; 18-19 for Task7; 21-22 for Task8;
wireless receiving : 2-3 for Task1; 7-8 for Task2; 10-11 for Task5; 13-14 for Ta
sk3; 16-17 for Task6; 19-20 for Task7; 22-23 for Task8;

Energy Consumption of scheduling: 27   Total Completion Time: 27
```

Input #1 – Scheduling Result



Input #2 – Base on Input #1 but connection changed



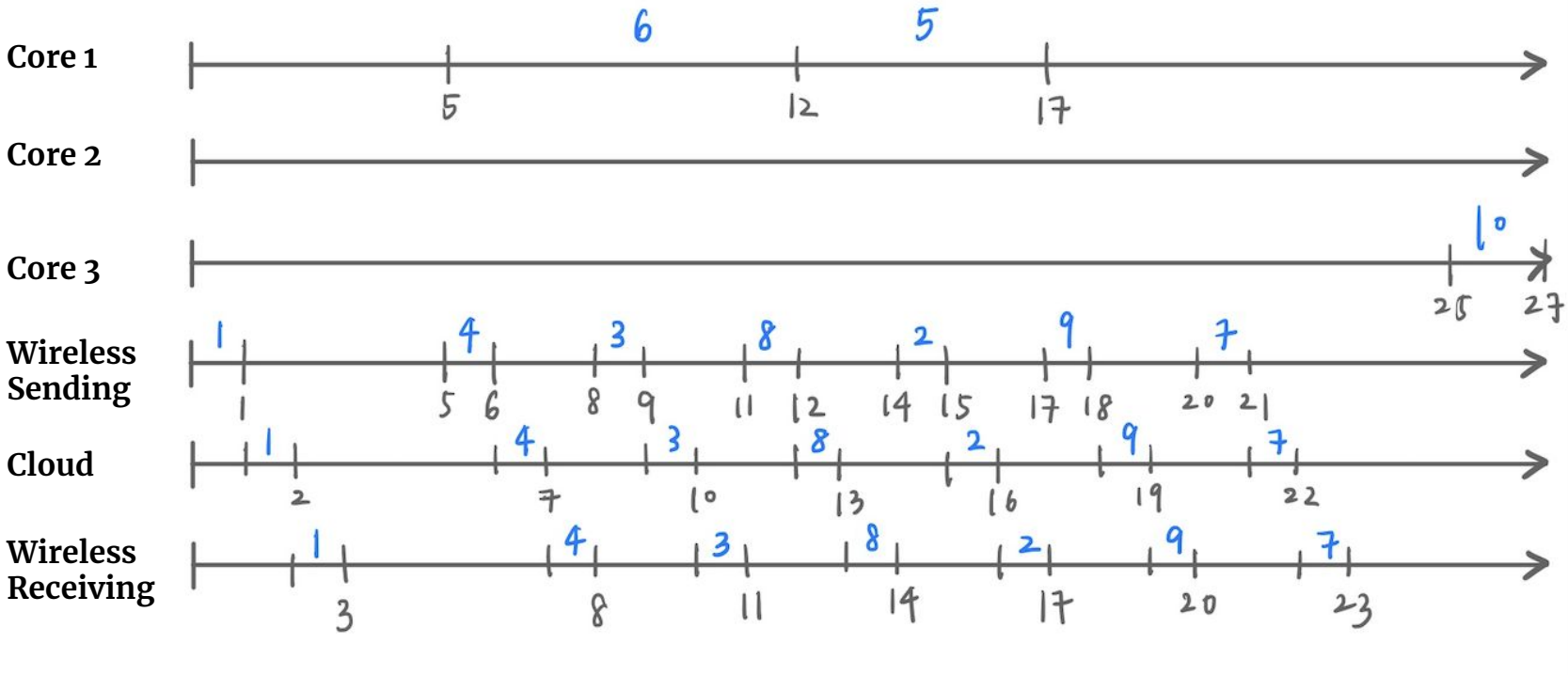
Task	Core1	Core2	Core3
1	9	7	5
2	8	6	5
3	6	5	4
4	7	5	3
5	5	4	2
6	7	6	4
7	8	5	3
8	6	4	2
9	5	3	2
10	7	4	2

$$1 \le \boldsymbol{i} \le \boldsymbol{N}, \begin{cases} \boldsymbol{T}_i^s = 3 \\ \boldsymbol{T}_i^c = 1 \\ \boldsymbol{T}_i^r = 1 \end{cases}$$

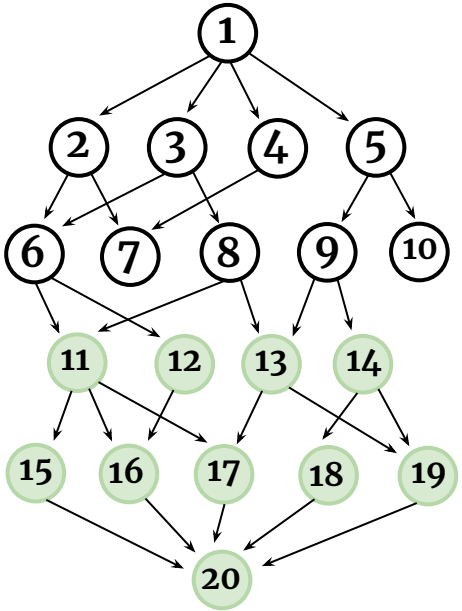
Input #2 - Output

```
ritak@yurongkaos-MacBook-Pro Project2 % ./input_2
Task scheduling result by the initial task scheduling algorithm:
Core1: 5-12 for Task6;
Core2: 5-10 for Task3; 10-15 for Task7;
Core3: 0-5 for Task1; 5-10 for Task2; 10-12 for Task5; 12-14 for Task8; 14-16 for Task9
; 16-18 for Task10;
wireless sending : 5-8 for Task4;
Cloud: 8-9 for Task4;
wireless receiving : 9-10 for Task4;

Energy Consumption of initial scheduling: 100.5   Total Completion Time: 18


Task scheduling result by the MCC task scheduling algorithm:
Core 1: 5-12 for Task6; 12-17 for Task5;
Core 2:
Core 3: 25-27 for Task10;
wireless sending : 0-1 for Task1; 5-6 for Task4; 8-9 for Task3; 11-12 for Task8; 14-15
for Task2; 17-18 for Task9; 20-21 for Task7;
Cloud: 1-2 for Task1; 6-7 for Task4; 9-10 for Task3; 12-13 for Task8; 15-16 for Task2;
18-19 for Task9; 21-22 for Task7;
wireless receiving : 2-3 for Task1; 7-8 for Task4; 10-11 for Task3; 13-14 for Task8; 16
-17 for Task2; 19-20 for Task9; 22-23 for Task7;

Energy Consumption of scheduling: 27   Total Completion Time: 27
```

Input #2 - Scheduling Result



Input #3 - Task number increase to 20



$$1 \le i \le N, \begin{cases} T_i^s = 3 \\ T_i^c = 1 \\ T_i^r = 1 \end{cases}$$

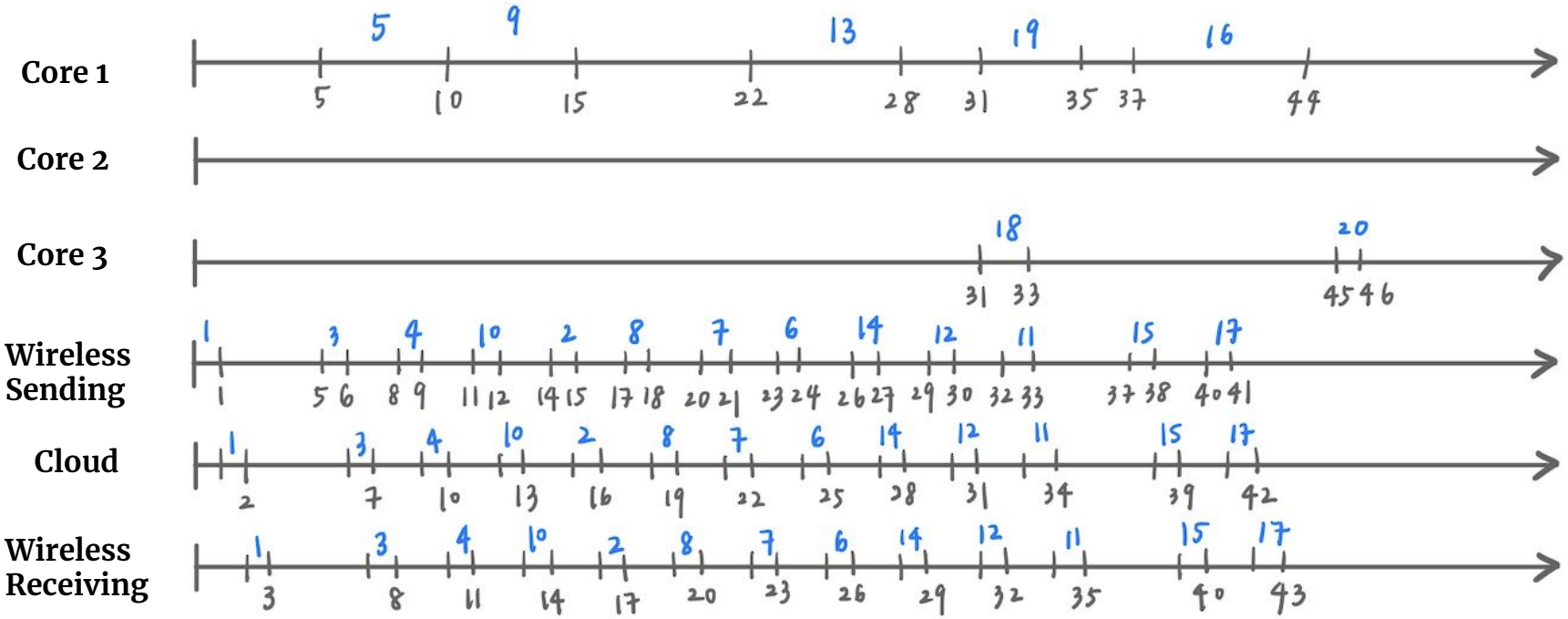
Task	Core 1	Core 2	Core 3
1	9	7	5
2	8	6	5
3	6	5	4
4	7	5	3
5	5	4	2
6	7	6	4
7	8	5	3
8	6	4	2
9	5	3	2
10	7	4	2

Task	Core 1	Core 2	Core 3
11	8	7	5
12	7	6	5
13	6	5	4
14	8	5	3
15	5	4	2
16	7	6	4
17	6	5	3
18	5	4	2
19	4	3	2
20	5	4	1

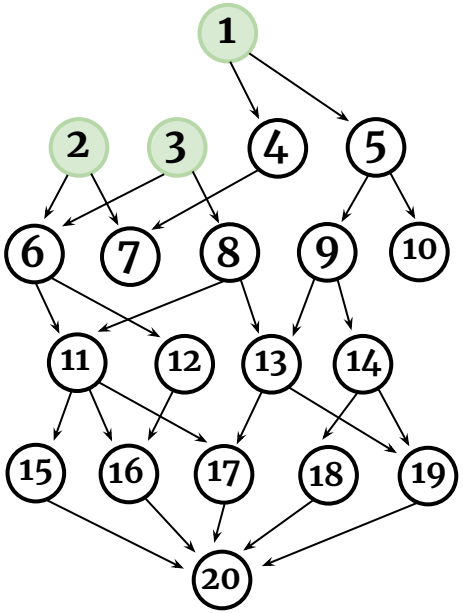
Input #3 - Output

```
ritak@yurongkaos-MacBook-Pro Project2 % ./input_3
Task scheduling result by the initial task scheduling algorithm:
Core1: 5-10 for Task5; 18-15 for Task9; 21-21 for Task13; 24-27 for Task19;
Core2: 5-10 for Task4; 10-14 for Task8; 27-31 for Task10; 18-22 for Task11; 24-27 for T
ask17;
Core3: 0-5 for Task1; 5-10 for Task2; 10-13 for Task7; 15-20 for Task12; 21-23 for Task
14; 23-27 for Task16; 27-29 for Task18; 29-30 for Task20;
wireless sending : 5-8 for Task3; 10-13 for Task6; 27-25 for Task15;
Cloud: 8-9 for Task3; 13-14 for Task6; 30-26 for Task15;
wireless receiving : 9-10 for Task3; 14-15 for Task6; 31-27 for Task15;

Energy Consumption of initial scheduling: 186.5   Total Completion Time: 30


Task scheduling result by the MCC task scheduling algorithm:
Core 1: 5-10 for Task5; 10-15 for Task9; 22-28 for Task13; 31-35 for Task19; 37-44 for
Task16;
Core 2:
Core 3: 31-33 for Task18; 45-46 for Task20;
wireless sending : 0-1 for Task1; 5-6 for Task3; 8-9 for Task4; 11-12 for Task10; 14-15
 for Task2; 17-18 for Task8; 20-21 for Task7; 23-24 for Task6; 26-27 for Task14; 29-30
for Task12; 32-33 for Task11; 37-38 for Task15; 40-41 for Task17;
Cloud: 1-2 for Task1; 6-7 for Task3; 9-10 for Task4; 12-13 for Task10; 15-16 for Task2;
 18-19 for Task8; 21-22 for Task7; 24-25 for Task6; 27-28 for Task14; 30-31 for Task12;
 33-34 for Task11; 38-39 for Task15; 41-42 for Task17;
wireless receiving : 2-3 for Task1; 7-8 for Task3; 10-11 for Task4; 13-14 for Task10; 1
6-17 for Task2; 19-20 for Task8; 22-23 for Task7; 25-26 for Task6; 28-29 for Task14; 31
-32 for Task12; 34-35 for Task11; 39-40 for Task15; 42-43 for Task17;

Energy Consumption of scheduling: 52   Total Completion Time: 46
```

Input #3 - Scheduling Result



Input #4 – Multiple entry tasks



$$1 \le i \le N, \begin{cases} T_i^s = 3 \\ T_i^c = 1 \\ T_i^r = 1 \end{cases}$$

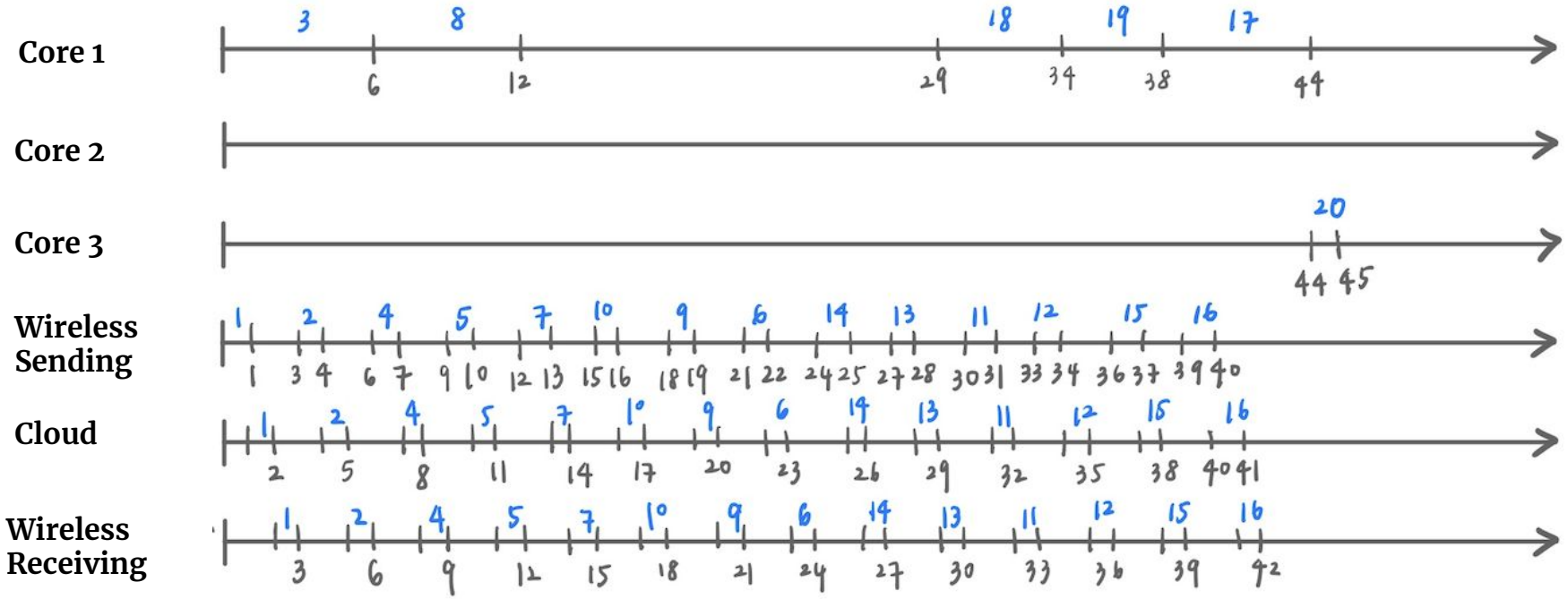
Task	Core 1	Core 2	Core 3
1	9	7	5
2	8	6	5
3	6	5	4
4	7	5	3
5	5	4	2
6	7	6	4
7	8	5	3
8	6	4	2
9	5	3	2
10	7	4	2

Task	Core 1	Core 2	Core 3
11	8	7	5
12	7	6	5
13	6	5	4
14	8	5	3
15	5	4	2
16	7	6	4
17	6	5	3
18	5	4	2
19	4	3	2
20	5	4	1

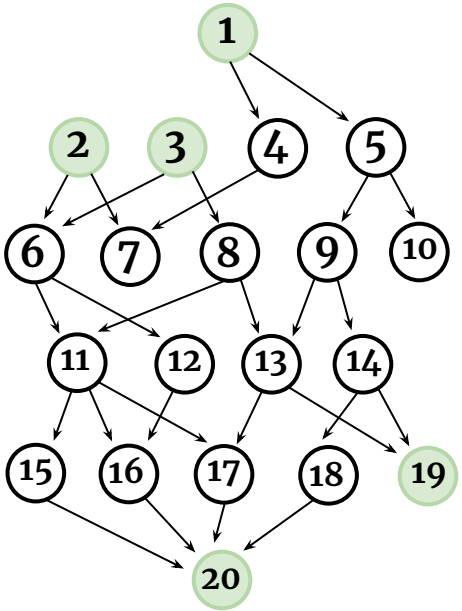
Input #4 - Output

```
ritak@yurongkaos-MacBook-Pro Project2 % ./input_4
Task scheduling result by the initial task scheduling algorithm:
Core1: 6-11 for Task8; 20-24 for Task19;
Core2: 0-5 for Task3; 6-11 for Task6; 24-28 for Task10; 11-18 for Task11; 19-24 for Tas
k16;
Core3: 0-5 for Task1; 0-5 for Task2; 5-8 for Task4; 8-11 for Task7; 11-13 for Task9; 13
-17 for Task13; 17-20 for Task14; 20-23 for Task17; 23-25 for Task18; 25-26 for Task20;

wireless sending : 11-8 for Task5; 11-14 for Task12; 25-22 for Task15;
Cloud: 14-9 for Task5; 14-15 for Task12; 28-23 for Task15;
wireless receiving : 15-10 for Task5; 15-16 for Task12; 29-24 for Task15;

Energy Consumption of initial scheduling: 194.5   Total Completion Time: 26


Task scheduling result by the MCC task scheduling algorithm:
Core 1: 0-6 for Task3; 6-12 for Task8; 29-34 for Task18; 34-38 for Task19; 38-44 for Ta
sk17;
Core 2:
Core 3: 44-45 for Task20;
wireless sending : 0-1 for Task1; 3-4 for Task2; 6-7 for Task4; 9-10 for Task5; 12-13 f
or Task7; 15-16 for Task10; 18-19 for Task9; 21-22 for Task6; 24-25 for Task14; 27-28 f
or Task13; 30-31 for Task11; 33-34 for Task12; 36-37 for Task15; 39-40 for Task16;
Cloud: 1-2 for Task1; 4-5 for Task2; 7-8 for Task4; 10-11 for Task5; 13-14 for Task7; 1
6-17 for Task10; 19-20 for Task9; 22-23 for Task6; 25-26 for Task14; 28-29 for Task13;
31-32 for Task11; 34-35 for Task12; 37-38 for Task15; 40-41 for Task16;
wireless receiving : 2-3 for Task1; 5-6 for Task2; 8-9 for Task4; 11-12 for Task5; 14-1
5 for Task7; 17-18 for Task10; 20-21 for Task9; 23-24 for Task6; 26-27 for Task14; 29-3
0 for Task13; 32-33 for Task11; 35-36 for Task12; 38-39 for Task15; 41-42 for Task16;

Energy Consumption of scheduling: 45   Total Completion Time: 45
```

Input #4 – Scheduling Result



Input #5 - Multiple entry and exit tasks



$$1 \le i \le N, \begin{cases} T_i^s = 3 \\ T_i^c = 1 \\ T_i^r = 1 \end{cases}$$

Task	Core 1	Core 2	Core 3
1	9	7	5
2	8	6	5
3	6	5	4
4	7	5	3
5	5	4	2
6	7	6	4
7	8	5	3
8	6	4	2
9	5	3	2
10	7	4	2

Task	Core 1	Core 2	Core 3
11	8	7	5
12	7	6	5
13	6	5	4
14	8	5	3
15	5	4	2
16	7	6	4
17	6	5	3
18	5	4	2
19	4	3	2
20	5	4	1

Input #5 - Output

```
ritak@yurongkaos-MacBook-Pro Project2 % ./input_5
Task scheduling result by the initial task scheduling algorithm:
Core1: 6-11 for Task8; 20-25 for Task18;
Core2: 0-5 for Task3; 6-11 for Task6; 11-18 for Task11; 19-24 for Task16; 24-27 for Tas
k19;
Core3: 0-5 for Task1; 0-5 for Task2; 5-8 for Task4; 8-11 for Task7; 11-13 for Task9; 26
-28 for Task10; 13-17 for Task13; 17-20 for Task14; 20-23 for Task17; 25-26 for Task20;

wireless sending : 11-8 for Task5; 11-14 for Task12; 23-22 for Task15;
Cloud: 14-9 for Task5; 14-15 for Task12; 26-23 for Task15;
wireless receiving : 15-10 for Task5; 15-16 for Task12; 27-24 for Task15;

Energy Consumption of initial scheduling: 193.5   Total Completion Time: 26


Task scheduling result by the MCC task scheduling algorithm:
Core 1: 0-6 for Task3; 6-12 for Task8; 14-19 for Task9; 24-29 for Task18; 33-39 for Tas
k17;
Core 2:
Core 3: 45-46 for Task20;
wireless sending : 0-1 for Task1; 3-4 for Task2; 6-7 for Task4; 9-10 for Task5; 12-13 f
or Task7; 15-16 for Task6; 19-20 for Task14; 22-23 for Task11; 25-26 for Task10; 28-29
for Task13; 31-32 for Task12; 34-35 for Task19; 37-38 for Task16; 40-41 for Task15;
Cloud: 1-2 for Task1; 4-5 for Task2; 7-8 for Task4; 10-11 for Task5; 13-14 for Task7; 1
6-17 for Task6; 20-21 for Task14; 23-24 for Task11; 26-27 for Task10; 29-30 for Task13;
 32-33 for Task12; 35-36 for Task19; 38-39 for Task16; 41-42 for Task15;
wireless receiving : 2-3 for Task1; 5-6 for Task2; 8-9 for Task4; 11-12 for Task5; 14-1
5 for Task7; 17-18 for Task6; 21-22 for Task14; 24-25 for Task11; 27-28 for Task10; 30-
31 for Task13; 33-34 for Task12; 36-37 for Task19; 39-40 for Task16; 42-43 for Task15;

Energy Consumption of scheduling: 46   Total Completion Time: 46
```

Input #5 - Scheduling Result