

Project experiment demos

Interface Design for a Meeting Scheduling Tool “Fast Scheduler”

Team name: C++ Addictor

Te Lai, Zishu Xia, Lezhi Wang, Sheng Wang

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Hypotheses

H1: Fast Scheduler is more efficient than When2meet for a group of 4 people.

H0-1: Fast Scheduler is not more efficient than When2meet for a group of 4 people.

H2: Fast Scheduler is more efficient than Google Calendar for a group of 4 people.

H0-2: Fast Scheduler is not more efficient than Google Calendar for a group of 4 people.

H3: Fast Scheduler is more efficient than When2meet for a group of 6 people.

H0-3: Fast Scheduler is not more efficient than When2meet for a group of 6 people.

H4: Fast Scheduler is more efficient than Google Calendar for a group of 6 people.

H0-4: Fast Scheduler is not more efficient than Google Calendar for a group of 6 people.

Variables

Independent Variables:

- The number of members in a group
- The meeting scheduler people use

Dependent Variables:

Total scheduling time

Nuisance Variables:

Though we are trying to make complexities of different timetables equal, it is still hard to ensure every timetable has the same difficulty of scheduling

Subjects

- 10 cases
- UBC students in different faculties
- Using different ways of scheduling meetings

Example:

Subject 1 - Our first subject is a UBC student majoring in Computer Engineering. He is taking five courses this term. All the courses have requirements that require team collaboration. His teams are using Facebook Message to discuss and address their meeting time.

Experiment Design - What a typical subject goes through

1. Be invited by C++ Addictor, and sign the consent form.
2. Be randomly given 10 pre-set timeables with same complexity which will be also set up on his/her SSC.
3. Be given a Google Calender account, and a Fast Scheduler account linked with their CWL account.
4. Participat in 10 tests (Test 1-10 or Test 11-20)

	The number of members in the group
Test 1	4
Test 2	6

Experiment Design - Steps in Each Test

- The group uses *When2meet* to upload their table (members operate one by one) and then discuss in discord chat to schedule a meeting.
- Each member login the *Google Calendar* account and then imports the timetable. One member in the group uses *Google Calendar* to host an equivalent meeting and invite other members.
- Each member login the *Fast Scheduler* account linked with their CWL account. One member in the group uses *Fast Scheduler* to host an equivalent meeting and invite other members.
- Above three processes are strictly timed and record for future analysis.

Experiment Design - Result Table (Test 1-10)

Group(4-people)	sample size(n)	Average T(seconds)	Standard deviation
Using Fast Scheduler			
Using When2Meet & IM software			
t			

Fast Scheduler vs When2Meet & IM software

Time cost table (using Two-Sample t-Test) for Test 1 - 10

Group(4-people)	sample size(n)	Average T(seconds)	Standard deviation
Using Fast Scheduler			
Using Google Calendar			
t			

Fast Scheduler vs Google Calendar

Time cost table (using Two-Sample t-Test) for Test 1 - 10

Test 11-20 use same format for result tables

Results Analysis-Data List

T(Total time cost)=Total time cost of everyone in one group				
Subject	Group size	T by using fast scheduler	T by using When2Meet & IM software	T by using google calendar
test 1	4	43	137	73
test 2	4	48	134	64
test 3	4	49	151	67
test 4	4	51	126	68
test 5	4	39	137	49
test 6	4	54	126	51
test 7	4	38	152	62
test 8	4	47	154	57
test 9	4	51	115	67
test 10	4	42	154	69
Average T		46.2	138.6	62.7
Standard deviation		5.43241301	13.77759857	7.958922317
Subject	Group size	T by using fast scheduler	T by using When2Meet & IM software	T by using google calendar
test 11	6	43	192	57
test 12	6	48	193	54
test 13	6	49	196	47
test 14	6	51	201	51
test 15	6	39	203	59
test 16	6	54	202	68
test 17	6	38	197	60
test 18	6	47	187	64
test 19	6	51	186	58
test 20	6	42	196	62
Average T		46.2	195.3	58
Standard deviation		5.43241301	5.888784066	6.18241233

Mathematics

Step1. Combined variance

$$s^2 = \frac{((n_1-1)s_1^2) + ((n_2-1)s_2^2)}{n_1+n_2-2}$$

Step2. Standard error of difference

$$s_{ed} = \sqrt{s^2 \left(\frac{1}{N_1} + \frac{1}{N_2} \right)}$$

Step3. t value

$$t = \frac{|\bar{X}_1 - \bar{X}_2|}{s_{ed}}$$

Step4.

We choose α as 0.05

Check the T-distribution table compare with t value

T-Distribution Tabletwo tailed: α 0.2

0.1

0.05

0.02

0.01

0.002

0.001

df	$\alpha = 0.1$	0.05	0.025	0.01	0.005	0.001	0.0005
∞	$t_{\alpha} = 1.282$	1.645	1.960	2.326	2.576	3.091	3.291
1	3.078	6.314	12.706	31.821	63.656	318.289	636.578
2	1.886	2.920	4.303	6.965	9.925	22.328	31.600
3	1.638	2.353	3.182	4.541	5.841	10.214	12.924
4	1.533	2.132	2.776	3.747	4.604	7.173	8.610
5	1.476	2.015	2.571	3.365	4.032	5.894	6.869
6	1.440	1.943	2.447	3.143	3.707	5.208	5.959
7	1.415	1.895	2.365	2.998	3.499	4.785	5.408
8	1.397	1.860	2.306	2.896	3.355	4.501	5.041
9	1.383	1.833	2.262	2.821	3.250	4.297	4.781
10	1.372	1.812	2.228	2.764	3.169	4.144	4.587
11	1.363	1.796	2.201	2.718	3.106	4.025	4.437
12	1.356	1.782	2.179	2.681	3.055	3.930	4.318
13	1.350	1.771	2.160	2.650	3.012	3.852	4.221
14	1.345	1.761	2.145	2.624	2.977	3.787	4.140
15	1.341	1.753	2.131	2.602	2.947	3.733	4.073
16	1.337	1.746	2.120	2.583	2.921	3.686	4.015
17	1.333	1.740	2.110	2.567	2.898	3.646	3.965
18	1.330	1.734	2.101	2.552	2.878	3.610	3.922
19	1.328	1.729	2.093	2.539	2.861	3.579	3.883
20	1.325	1.725	2.086	2.528	2.845	3.552	3.850
21	1.323	1.721	2.080	2.518	2.831	3.527	3.819
22	1.321	1.717	2.074	2.508	2.819	3.505	3.792
23	1.319	1.714	2.069	2.500	2.807	3.485	3.768
24	1.318	1.711	2.064	2.492	2.797	3.467	3.745
25	1.316	1.708	2.060	2.485	2.787	3.450	3.725

Results Analysis

Group(4-people)	sample size(n)	Average T(seconds)	Standard deviation
Using Fast Scheduler	10	46.20	5.43
Using When2Meet & IM software	10	138.60	13.78
t			$t=19.73 > 2.101$

H1: Fast Scheduler is more efficient than When2meet for a group of 4 people.

H0-1: Fast Scheduler is not more efficient than When2meet for a group of 4 people.

Results Analysis

Group(4-people)	sample size(n)	Average T(seconds)	Standard deviation
Using Fast Scheduler	10	46.20	5.43
Using Google Calendar	10	62.70	7.96
t			t=5.42>2.101

H2: Fast Scheduler is more efficient than Google Calendar for a group of 4 people.

H0-2: Fast Scheduler is not more efficient than Google Calendar for a group of 4 people.

Results Analysis

Group(6-people)	sample size(n)	Average T(seconds)	Standard deviation
Using Fast Scheduler	10	46.20	5.43
Using When2Meet & IM software	10	195.30	5.89
t			t=58.86>2.101

H3: Fast Scheduler is more efficient than When2meet for a group of 6 people.

H0-3: Fast Scheduler is not more efficient than When2meet for a group of 6 people.

Results Analysis

Group(6-people)	sample size(n)	Average T(seconds)	Standard deviation
Using Fast Scheduler	10	46.20	5.43
Using Google Calendar	10	58.30	6.36
t			t=4.58>2.101

H4: Fast Scheduler is more efficient than Google Calendar for a group of 6 people.

H0-4: Fast Scheduler is not more efficient than Google Calendar for a group of 6 people.

Q&A