

An Experimental Evaluation of ITL, TDD and BDD: An extended study

Next, the tables of the research work are shown, which due to format limitations are presented in this section

TABLE I. McCabe's cyclomatic complexity level.

<i>Complexity Number</i>	<i>Meaning</i>
1-10	Structured and well written code High Testability Cost and Effort is less
11-20	Complex Code Medium Testability Cost and effort is Medium
21-50	Very complex Code Low Testability Cost and Effort are high
>50	Not at all testable Very high Cost and Effort

TABLE II. FizzBuzz metrics' data

Subject	Sex	Resolution Order	External Quality (percent)			Productivity (percent per minute)			McCabe's Cyclomatic complexity			PMD (number of errors in code)		
			ITL	TDD	BDD	ITL	TDD	BDD	ITL	TDD	BDD	ITL	TDD	BDD
S1	M	ITL \rightarrow TDD \rightarrow BDD	94,74	94,74	94,74	1,59	2,40	2,51	25	24	24	1	8	8
S2	M	ITL \rightarrow TDD \rightarrow BDD	94,74	89,47	94,74	1,51	1,70	2,07	17	15	15	12	11	12
S3	M	ITL \rightarrow BDD \rightarrow TDD	86,84	100	100	1,45	4,51	1,85	18	18	16	4	11	1
S4	M	TDD \rightarrow ITL \rightarrow BDD	100	100	100	1,66	1,63	2,18	15	15	15	4	5	7
S5	M	TDD \rightarrow ITL \rightarrow BDD	94,74	97,37	100	2,31	1,78	1,79	24	22	23	3	3	2
S6	M	ITL \rightarrow BDD \rightarrow TDD	94,74	94,74	94,74	1,88	2,10	1,63	23	22	23	2	2	2
S7	F	TDD \rightarrow BDD \rightarrow ITL	100	100	100	1,94	2,22	2,87	18	18	21	2	2	2
S8	M	TDD \rightarrow ITL \rightarrow BDD	100	94,74	100	4,00	1,45	2,88	21	20	21	2	2	4
S9	M	TDD \rightarrow ITL \rightarrow BDD	100	89,47	100	2,24	1,13	2,13	18	14	18	2	2	2
S10	M	BDD \rightarrow ITL \rightarrow TDD	100	100	100	3,53	3,84	1,70	12	12	12	2	2	2
S11	M	BDD \rightarrow ITL \rightarrow TDD	100	100	100	2,19	3,34	2,10	12	12	12	2	2	2
S12	M	TDD \rightarrow BDD \rightarrow ITL	73,68	73,68	73,68	1,02	1,06	1,08	12	12	12	2	2	2
S13	F	TDD \rightarrow BDD \rightarrow ITL	100	94,74	100	2,65	1,42	1,80	21	22	21	5	5	5
S14	M	BDD \rightarrow TDD \rightarrow ITL	100	100	100	3,09	4,01	2,38	21	21	21	1	1	1
S15	M	BDD \rightarrow TDD \rightarrow ITL	100	100	100	4,95	2,90	1,54	18	17	16	1	2	2
S16	M	BDD \rightarrow ITL \rightarrow TDD	94,74	100	100	1,95	3,07	1,92	17	17	16	1	1	3
S17	M	BDD \rightarrow ITL \rightarrow TDD	94,74	100	100	3,60	5,24	1,92	17	17	16	1	1	1
S18	M	TDD \rightarrow BDD \rightarrow ITL	100	100	100	5,33	1,61	2,11	12	12	12	2	2	2
S19	M	ITL \rightarrow BDD \rightarrow TDD	31,58	100	100	0,54	4,02	2,00	17	17	8	1	2	2
S20	F	BDD \rightarrow TDD \rightarrow ITL	100	100	100	5,08	3,41	2,31	21	21	21	1	1	1
S21	M	ITL \rightarrow TDD \rightarrow BDD	94,74	100	100	2,29	2,88	2,93	18	18	17	2	2	2
S22	M	ITL \rightarrow TDD \rightarrow BDD	100	100	100	2,75	4,82	3,57	15	15	15	1	1	2

TABLE III. String Calculator metrics' data

Subject	Sex	Resolution Order	External Quality (percent)			Productivity (percent per minute)			McCabe's Cyclomatic complexity			PMD (number of errors in code)		
			ITL	TDD	BDD	ITL	TDD	BDD	ITL	TDD	BDD	ITL	TDD	BDD
S1	M	ITL \rightarrow TDD \rightarrow BDD	94,74	94,74	94,74	1,59	2,40	2,51	25	24	24	1	8	8
S2	M	ITL \rightarrow TDD \rightarrow BDD	94,74	89,47	94,74	1,51	1,70	2,07	17	15	15	12	11	12
S3	M	ITL \rightarrow BDD \rightarrow TDD	86,84	100	100	1,45	4,51	1,85	18	18	16	4	11	1
S4	M	TDD \rightarrow ITL \rightarrow BDD	100	100	100	1,66	1,63	2,18	15	15	15	4	5	7
S5	M	TDD \rightarrow ITL \rightarrow BDD	94,74	97,37	100	2,31	1,78	1,79	24	22	23	3	3	2
S6	M	ITL \rightarrow BDD \rightarrow TDD	94,74	94,74	94,74	1,88	2,10	1,63	23	22	23	2	2	2
S7	F	TDD \rightarrow BDD \rightarrow ITL	100	100	100	1,94	2,22	2,87	18	18	21	2	2	2
S8	M	TDD \rightarrow ITL \rightarrow BDD	100	94,74	100	4,00	1,45	2,88	21	20	21	2	2	4
S9	M	TDD \rightarrow ITL \rightarrow BDD	100	89,47	100	2,24	1,13	2,13	18	14	18	2	2	2
S10	M	BDD \rightarrow ITL \rightarrow TDD	100	100	100	3,53	3,84	1,70	12	12	12	2	2	2
S11	M	BDD \rightarrow ITL \rightarrow TDD	100	100	100	2,19	3,34	2,10	12	12	12	2	2	2
S12	M	TDD \rightarrow BDD \rightarrow ITL	73,68	73,68	73,68	1,02	1,06	1,08	12	12	12	2	2	2
S13	F	TDD \rightarrow BDD \rightarrow ITL	100	94,74	100	2,65	1,42	1,80	21	22	21	5	5	5
S14	M	BDD \rightarrow TDD \rightarrow ITL	100	100	100	3,09	4,01	2,38	21	21	21	1	1	1
S15	M	BDD \rightarrow TDD \rightarrow ITL	100	100	100	4,95	2,90	1,54	18	17	16	1	2	2
S16	M	BDD \rightarrow ITL \rightarrow TDD	94,74	100	100	1,95	3,07	1,92	17	17	16	1	1	3
S17	M	BDD \rightarrow ITL \rightarrow TDD	94,74	100	100	3,60	5,24	1,92	17	17	16	1	1	1
S18	M	TDD \rightarrow BDD \rightarrow ITL	100	100	100	5,33	1,61	2,11	12	12	12	2	2	2
S19	M	ITL \rightarrow BDD \rightarrow TDD	31,58	100	100	0,54	4,02	2,00	17	17	8	1	2	2
S20	F	BDD \rightarrow TDD \rightarrow ITL	100	100	100	5,08	3,41	2,31	21	21	21	1	1	1
S21	M	ITL \rightarrow TDD \rightarrow BDD	94,74	100	100	2,29	2,88	2,93	18	18	17	2	2	2
S22	M	ITL \rightarrow TDD \rightarrow BDD	100	100	100	2,75	4,82	3,57	15	15	15	1	1	2