**Detailed Explanations**

**1.** [**Deadlock**](https://deadlockempire.github.io/#L2-deadlock) **(Problem 1)**

**What it does**  
Two threads acquire two locks. The implementation is done in opposite orders. Thread 0 enters by first locking mutex1 then mutex2, while Thread 1 locks mutex2 first and then mutex1.

**Effect**  
Threads can each hold one lock and wait forever for the other ⇒ **deadlock**.  
**Root Cause**  
Circular wait due to inconsistent lock acquisition order (lock-ordering violation) – Implementation.  
**Other**  
Classic “lock inversion” scenario in multithreaded code.

**2. Non-Atomic Instructions (Problem 2)**

**What it does**  
Two threads do a = a + 1; if (a == 1) CS. When expanded into multiple micro-steps, interleaving can let both enter CS.   
**Effect**  
Both threads enter CS ⇒ **incorrect computation**.  
**Root Cause**  
Assuming a compound statement is atomic; in reality it’s (read, increment, write), violating atomicity. ⇒ **race condition**  
**Other**  
Illustrates need for atomic reads/writes or explicit locking .

**3.** [**Boolean Flags Are Enough For Everyone**](https://deadlockempire.github.io/#2-flags) **(Weak Flag Guard) (Problem 3)**

**What it does**  
Two threads share a single Boolean flag. Each does:

while(flag != false)

{ }

flag = true;

CS;

flag = false;

**Effect**  
By stepping between guard and flag-set, both can pass ⇒ **mutual-exclusion violation**.  
**Root Cause**  
Weak guard: checking flag and setting it are non-atomic, allowing interleaving.  
**Other**  
Demonstrates need for atomic test-and-set or proper lock .

**4.** [**Insufficient Lock**](https://deadlockempire.github.io/#L1-lock) **(Problem 4)**

**What it does**  
Two threads modify a shared variable i under a lock. Thread 0 increments i by 2 and then tests whether i == 5 (triggering an assertion), while Thread 1 decrements i by 1.

**Effect**  
'i' can be modified concurrently ⇒ **incorrect computation** or even assertion failure.  
**Root Cause**  
Lock does not cover all shared-state accesses (insufficient critical region) ⇒ **race condition**  
**Other**  
Although a lock is used, the coordination (i.e., the arithmetic and the order of operations within the critical section) is flawed. The locking is “insufficient” because it does not prevent an unexpected combination of operations that leads to an invariant failure.

**5.**[**A more complex thread**](https://deadlockempire.github.io/#L3-complexer) **- Spinlock vs. Blocking (Problem 5)**

**What it does**  
Two threads combine several locks (including a recursive lock on the same object), a try-lock call, and the use of a shared flag to determine different lock acquisition paths.  
**Effect**  
The overall complexity creates room for errors such as forgotten releases, inconsistent lock ordering, or misinterpreted flag conditions. This may lead to **deadlocks**.  
**Root Cause**  
Active waiting (spinlock) instead of blocking wait; non-cooperative scheduling. race conditions.  
**Other**  
Overcomplicating the locking protocol—with inconsistent ordering, reentrant locking, and conditional lock acquisition—results in a fragile synchronization design.

**6.** [**Condition Variable**](https://deadlockempire.github.io/#CV1-simple) **Misuse (Problem 6)**

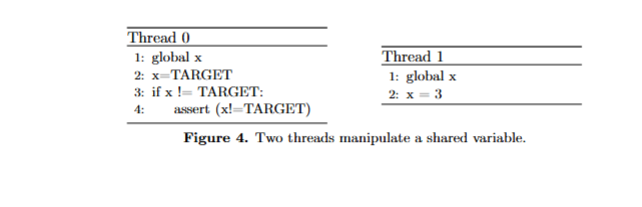
**What it does**  
Two consumer threads check a shared queue: if it is empty, they call [Monitor.Wait](https://Monitor.Wait)(mutex). A producer thread enqueues an element and signals all waiting threads using [Monitor.PulseAll](https://Monitor.PulseAll)(mutex).  
**Effect**  
Consumers may wake spuriously or miss signals ⇒ possible **deadlock** (threads stuck) or **missed data**.  
**Root Cause**  
Using if instead of while around Wait; not re-checking condition on wakeup. allows a **race condition** between consumers, which can result in runtime errors.  
**Other**  
The misuse of condition variables—failing to recheck the condition in a loop.

**7.** [**Dragons**](https://deadlockempire.github.io/#D1-Dragonfire) **- Simple Counters (Five- vs. Three-Headed) (Problem 7)**

**What it does**  
Two “dragon” threads each increment a shared counter and, based on different threshold conditions (one enters the critical section at a count of 5, the other at 3), try to trigger an event.  
**Effect**  
Without any synchronization around the counter, the updates interleave unpredictably. The threads may enter the critical section at unintended times or even simultaneously⇒ **mutual exclusion violation**.  
**Root Cause**  
Non-atomic increment + check; missing synchronization. ⇒ **race condition**  
**Other**  
The shared counter is not protected by locks (or another synchronization mechanism), so its unsynchronized updates produce a race condition.

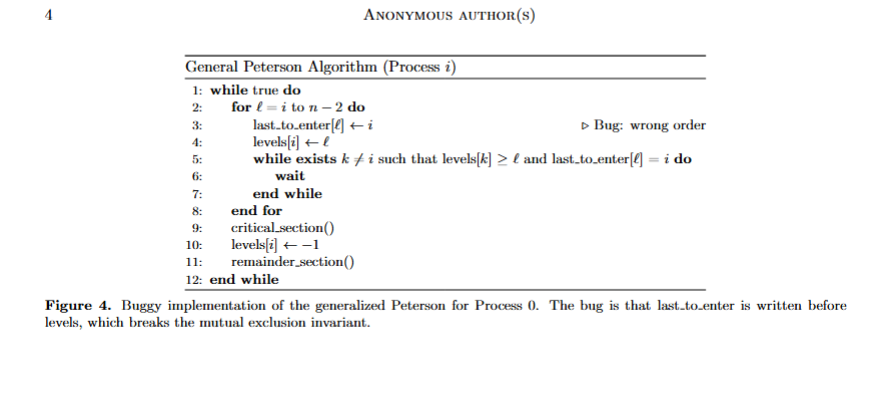
**8. Test-and-Set Bug (Problem 8)**

**What it does**  
A generator-based simulation models a test‑and‑set operation where one thread sets a shared variable x to a target value and another thread may interleave and change x in context switches..  
**Effect**  
Assertion may fire incorrectly ⇒ **incorrect computation**.  
**Root Cause**  
If the operations on x are not atomic, the expected invariant (that x remains equal to the target after being set) can be violated, triggering an assertion failure ⇒ **race condition**.  
**Other**  
The test‑and‑set operation is not implemented atomically. Context switches reveal that without true atomicity, the mechanism fails.



**9. Generalized Peterson (Problem 9)**

**What it does**  
An implementation of Peterson’s algorithm (generalized for 4 processes) is provided. It uses arrays for process “levels” and a last\_to\_enter array to determine ordering.  
**Effect**  
Because the code omits the assignment to last\_to\_enter[level] (noted as a bug in the comment), the mutual exclusion guarantee is broken. Multiple processes may enter the critical section concurrently ⇒ **mutual-exclusion violation**.  
**Root Cause**  
Incorrect tie-breaking due to missing/incorrect update in choosing protocol.  
**Other**  
A small but critical error in the algorithm’s implementation—the missing update to last\_to\_enter—destroys the primary synchronization invariant.



**10.** [**Barrier**](https://deadlockempire.github.io/#H4-Barrier) **Misuse (Problem 10)**

**What it does**  
Three threads increment fireballCharge and call SignalAndWait(). The third thread calls SignalAndWait() twice before resetting. However, the barrier is designed for only two participants  
**Effect**  
Because the barrier expects exactly two threads, some threads may wait forever (deadlock) or signal conditions (like an assertion checking that fireballCharge is at least 2) are violated ⇒ potential **deadlock**.  
**Root Cause**  
Incorrect number of barrier signals/waits (protocol violation) ⇒ **race condition?** .  
**Other**  
The synchronization primitive is misconfigured: using a barrier with the wrong number of participants means that the intended coordination is not achieved.

**11.** [**Semaphore**](https://deadlockempire.github.io/#S1-simple) **Misuse (Problem 11)**

**What it does**  
Two threads use a semaphore to control access to a critical section. Thread 0 follows the standard wait–critical section–release flow. Thread 1, however, uses a time‑limited wait and then calls release regardless of success.  
**Effect**  
Thread 1 can call Release() without a matching Wait() ⇒ semaphore count corrupted, can allow multiple CS ⇒ **mutual-exclusion violation**.  
**Root Cause**  
The logic error of calling Release() without having secured the resource (i.e. releasing without acquisition) upsets the semaphore’s intended behavior ⇒ **weak guard**.  
**Other**  
Semaphores require one-to-one Wait/Release pairing .

Deadlock

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Root cause 🡪  Outcome ↓ | Implementation | Non-atomic | No / weak guard | Race condition |
| Deadlock | 1) deadlock;  6) condition | 5) complex |  | 10) barrier |
| Unexpected data | 8) test & set | 2) non-atomic; 8) test & set | 6) condition | 4) lock; 6) condition; 10) barrier; 8) t&s; |
| Mutual exclusion violation | 9) Peterson; 11) semaphore | 2) non-atomic; 5) complex | 3) boolean | 7) dragon |

Non\_atomic

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Ans best | Ans 5th | Ans 10th | Classifier best | Classifier 5th | Classifier10th | BF best | BF 5th | BF 10th | SA best | GA best |
| 100 | AV | **0.402** | 0.157 | 0.000 | **0.405** | 0.165 | 0.000 | **0.010** | #DIV/0! | #DIV/0! | **0.006** | **0.104** |
| SD | 0.067 | 0.075 | 0.000 | 0.055 | 0.074 | 0.000 | 0.053 | #DIV/0! | #DIV/0! | 0.035 | 0.151 |
| 300 | AV | **0.432** | 0.261 | 0.083 | **0.437** | 0.271 | 0.101 | **0.023** | 0.000 | #DIV/0! | **0.000** | **0.162** |
| SD | 0.038 | 0.081 | 0.077 | 0.056 | 0.088 | 0.087 | 0.066 | 0.000 | #DIV/0! | 0.000 | 0.143 |
| 500 | AV | **0.442** | 0.317 | 0.176 | **0.447** | 0.323 | 0.176 | **0.017** | 0.000 | 0.000 | **0.000** | **0.205** |
| SD | 0.044 | 0.057 | 0.084 | 0.044 | 0.072 | 0.090 | 0.057 | 0.000 | 0.000 | 0.000 | 0.148 |
| 700 | AV | **0.454** | 0.329 | 0.194 | **0.442** | 0.333 | 0.203 | **0.061** | 0.000 | 0.000 | **0.014** | **0.209** |
| SD | 0.044 | 0.050 | 0.072 | 0.038 | 0.050 | 0.074 | 0.108 | 0.000 | 0.000 | 0.069 | 0.124 |
| 900 | AV | **0.450** | 0.334 | 0.212 | **0.456** | 0.347 | 0.224 | **0.056** | 0.000 | 0.000 | **0.018** | **0.181** |
| SD | 0.047 | 0.048 | 0.064 | 0.045 | 0.045 | 0.066 | 0.093 | 0.000 | 0.000 | 0.075 | 0.148 |
| 1100 | AV | **0.448** | 0.339 | 0.204 | **0.458** | 0.351 | 0.241 | **0.098** | 0.000 | 0.000 | **0.020** | **0.174** |
| SD | 0.049 | 0.045 | 0.064 | 0.043 | 0.049 | 0.071 | 0.136 | 0.000 | 0.000 | 0.082 | 0.143 |
| 1300 | AV | **0.453** | 0.342 | 0.203 | **0.460** | 0.353 | 0.222 | **0.052** | 0.000 | 0.000 | **0.007** | **0.229** |
| SD | 0.041 | 0.038 | 0.059 | 0.045 | 0.041 | 0.068 | 0.107 | 0.000 | 0.000 | 0.037 | 0.128 |
| 1500 | AV | **0.444** | 0.347 | 0.203 | **0.460** | 0.355 | 0.224 | **0.084** | 0.000 | 0.000 | **0.024** | **0.204** |
| SD | 0.046 | 0.046 | 0.052 | 0.040 | 0.036 | 0.068 | 0.127 | 0.000 | 0.000 | 0.097 | 0.146 |
| 1700 | AV | **0.451** | 0.326 | 0.193 | **0.461** | 0.357 | 0.235 | **0.102** | 0.000 | 0.000 | **0.018** | **0.224** |
| SD | 0.043 | 0.054 | 0.062 | 0.036 | 0.038 | 0.051 | 0.129 | 0.000 | 0.000 | 0.067 | 0.143 |
| 1900 | AV | **0.453** | 0.337 | 0.196 | **0.455** | 0.352 | 0.235 | **0.067** | 0.000 | 0.000 | **0.023** | **0.191** |
| SD | 0.034 | 0.049 | 0.055 | 0.046 | 0.043 | 0.065 | 0.085 | 0.000 | 0.000 | 0.081 | 0.165 |
| 2100 | AV | **0.456** | 0.330 | 0.193 | **0.457** | 0.350 | 0.239 | **0.113** | 0.000 | 0.000 | **0.000** | **0.221** |
| SD | 0.040 | 0.050 | 0.059 | 0.042 | 0.030 | 0.058 | 0.149 | 0.000 | 0.000 | 0.002 | 0.141 |
| 2300 | AV | **0.455** | 0.322 | 0.189 | **0.459** | 0.353 | 0.235 | **0.173** | 0.000 | 0.000 | **0.012** | **0.230** |
| SD | 0.053 | 0.056 | 0.063 | 0.034 | 0.036 | 0.047 | 0.187 | 0.000 | 0.000 | 0.064 | 0.144 |
| 2500 | AV | **0.442** | 0.328 | 0.183 | **0.447** | 0.346 | 0.236 | **0.132** | 0.000 | 0.000 | **0.024** | **0.223** |
| SD | 0.031 | 0.054 | 0.050 | 0.032 | 0.039 | 0.055 | 0.166 | 0.000 | 0.000 | 0.089 | 0.139 |
| 2700 | AV | **0.449** | 0.327 | 0.176 | **0.452** | 0.363 | 0.260 | **0.107** | 0.000 | 0.000 | **0.017** | **0.181** |
| SD | 0.038 | 0.048 | 0.055 | 0.037 | 0.039 | 0.062 | 0.141 | 0.000 | 0.000 | 0.068 | 0.129 |
| 2900 | AV | **0.448** | 0.334 | 0.168 | **0.456** | 0.354 | 0.242 | **0.157** | 0.002 | 0.000 | **0.022** | **0.187** |
| SD | 0.032 | 0.042 | 0.048 | 0.033 | 0.037 | 0.060 | 0.144 | 0.011 | 0.000 | 0.070 | 0.134 |
| 3100 | AV | **0.444** | 0.325 | 0.171 | **0.463** | 0.358 | 0.249 | **0.157** | 0.001 | 0.000 | **0.013** | **0.187** |
| SD | 0.042 | 0.049 | 0.053 | 0.040 | 0.039 | 0.047 | 0.158 | 0.005 | 0.000 | 0.075 | 0.123 |
| 3300 | AV | **0.442** | 0.321 | 0.171 | **0.454** | 0.360 | 0.248 | **0.135** | 0.001 | 0.000 | **0.025** | **0.215** |
| SD | 0.041 | 0.044 | 0.050 | 0.037 | 0.029 | 0.050 | 0.116 | 0.005 | 0.000 | 0.086 | 0.141 |
| 3500 | AV | **0.455** | 0.339 | 0.176 | **0.454** | 0.365 | 0.248 | **0.203** | 0.004 | 0.000 | **0.029** | **0.210** |
| SD | 0.042 | 0.045 | 0.062 | 0.037 | 0.035 | 0.053 | 0.140 | 0.015 | 0.000 | 0.106 | 0.145 |
| 3700 | AV | **0.446** | 0.326 | 0.172 | **0.452** | 0.364 | 0.263 | **0.192** | 0.000 | 0.000 | **0.010** | **0.211** |
| SD | 0.043 | 0.054 | 0.057 | 0.036 | 0.035 | 0.050 | 0.141 | 0.000 | 0.000 | 0.045 | 0.147 |
| 3900 | AV | **0.460** | 0.322 | 0.170 | **0.469** | 0.360 | 0.248 | **0.176** | 0.000 | 0.000 | **0.026** | **0.169** |
| SD | 0.041 | 0.055 | 0.058 | 0.043 | 0.032 | 0.054 | 0.151 | 0.000 | 0.000 | 0.094 | 0.118 |

Test and Set

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Ans best | Ans 5th | Ans 10th | Classifier best | Classifier 5th | Classifier10th | BF best | BF 5th | BF 10th | SA best | GA best |
| 100 | AV | **0.257** | 0.071 | 0.004 | **0.258** | 0.075 | 0.001 | **0.008** | #DIV/0! | #DIV/0! | **0.002** | **0.018** |
| SD | 0.084 | 0.044 | 0.009 | 0.080 | 0.038 | 0.004 | 0.025 | #DIV/0! | #DIV/0! | 0.009 | 0.050 |
| 300 | AV | **0.357** | 0.239 | 0.146 | **0.326** | 0.191 | 0.093 | **0.008** | 0.000 | #DIV/0! | **0.007** | **0.046** |
| SD | 0.057 | 0.042 | 0.044 | 0.061 | 0.057 | 0.037 | 0.035 | 0.000 | #DIV/0! | 0.041 | 0.071 |
| 500 | AV | **0.369** | 0.245 | 0.157 | **0.336** | 0.206 | 0.124 | **0.016** | 0.000 | 0.000 | **0.005** | **0.048** |
| SD | 0.058 | 0.038 | 0.042 | 0.053 | 0.043 | 0.042 | 0.036 | 0.000 | 0.000 | 0.027 | 0.059 |
| 700 | AV | **0.361** | 0.244 | 0.156 | **0.344** | 0.213 | 0.133 | **0.047** | 0.000 | 0.000 | **0.012** | **0.065** |
| SD | 0.065 | 0.043 | 0.040 | 0.058 | 0.047 | 0.039 | 0.085 | 0.000 | 0.000 | 0.057 | 0.084 |
| 900 | AV | **0.362** | 0.241 | 0.161 | **0.341** | 0.224 | 0.146 | **0.036** | 0.000 | 0.000 | **0.014** | **0.076** |
| SD | 0.055 | 0.044 | 0.044 | 0.055 | 0.040 | 0.036 | 0.085 | 0.000 | 0.000 | 0.059 | 0.089 |
| 1100 | AV | **0.363** | 0.247 | 0.162 | **0.349** | 0.231 | 0.153 | **0.038** | 0.000 | 0.000 | **0.017** | **0.075** |
| SD | 0.056 | 0.040 | 0.036 | 0.046 | 0.040 | 0.045 | 0.067 | 0.000 | 0.000 | 0.074 | 0.088 |
| 1300 | AV | **0.351** | 0.237 | 0.158 | **0.349** | 0.234 | 0.150 | **0.052** | 0.000 | 0.000 | **0.011** | **0.065** |
| SD | 0.064 | 0.036 | 0.042 | 0.052 | 0.035 | 0.038 | 0.082 | 0.000 | 0.000 | 0.042 | 0.077 |
| 1500 | AV | **0.356** | 0.234 | 0.156 | **0.355** | 0.235 | 0.151 | **0.023** | 0.000 | 0.000 | **0.022** | **0.083** |
| SD | 0.057 | 0.040 | 0.045 | 0.049 | 0.036 | 0.037 | 0.040 | 0.000 | 0.000 | 0.068 | 0.076 |
| 1700 | AV | **0.351** | 0.229 | 0.148 | **0.355** | 0.233 | 0.150 | **0.060** | 0.000 | 0.000 | **0.029** | **0.078** |
| SD | 0.059 | 0.043 | 0.041 | 0.034 | 0.036 | 0.038 | 0.082 | 0.000 | 0.000 | 0.094 | 0.094 |
| 1900 | AV | **0.335** | 0.224 | 0.145 | **0.358** | 0.240 | 0.163 | **0.052** | 0.000 | 0.000 | **0.015** | **0.067** |
| SD | 0.057 | 0.042 | 0.041 | 0.056 | 0.046 | 0.039 | 0.077 | 0.000 | 0.000 | 0.044 | 0.086 |
| 2100 | AV | **0.340** | 0.223 | 0.136 | **0.348** | 0.239 | 0.161 | **0.047** | 0.000 | 0.000 | **0.019** | **0.097** |
| SD | 0.053 | 0.041 | 0.044 | 0.041 | 0.039 | 0.037 | 0.069 | 0.000 | 0.000 | 0.071 | 0.076 |
| 2300 | AV | **0.336** | 0.218 | 0.137 | **0.356** | 0.243 | 0.164 | **0.068** | 0.000 | 0.000 | **0.008** | **0.105** |
| SD | 0.052 | 0.038 | 0.032 | 0.053 | 0.034 | 0.035 | 0.093 | 0.000 | 0.000 | 0.025 | 0.102 |
| 2500 | AV | **0.342** | 0.228 | 0.147 | **0.356** | 0.250 | 0.165 | **0.072** | 0.001 | 0.000 | **0.028** | **0.101** |
| SD | 0.051 | 0.037 | 0.040 | 0.056 | 0.032 | 0.027 | 0.080 | 0.005 | 0.000 | 0.087 | 0.082 |
| 2700 | AV | **0.332** | 0.207 | 0.136 | **0.356** | 0.244 | 0.166 | **0.063** | 0.002 | 0.000 | **0.012** | **0.078** |
| SD | 0.066 | 0.047 | 0.037 | 0.047 | 0.028 | 0.031 | 0.070 | 0.007 | 0.000 | 0.058 | 0.089 |
| 2900 | AV | **0.342** | 0.216 | 0.132 | **0.360** | 0.250 | 0.171 | **0.067** | 0.000 | 0.000 | **0.013** | **0.074** |
| SD | 0.049 | 0.038 | 0.037 | 0.045 | 0.032 | 0.033 | 0.083 | 0.000 | 0.000 | 0.043 | 0.092 |
| 3100 | AV | **0.312** | 0.209 | 0.127 | **0.355** | 0.248 | 0.174 | **0.073** | 0.000 | 0.000 | **0.024** | **0.085** |
| SD | 0.052 | 0.042 | 0.035 | 0.047 | 0.033 | 0.029 | 0.080 | 0.000 | 0.000 | 0.073 | 0.080 |
| 3300 | AV | **0.337** | 0.220 | 0.132 | **0.360** | 0.245 | 0.170 | **0.081** | 0.000 | 0.000 | **0.033** | **0.082** |
| SD | 0.061 | 0.041 | 0.039 | 0.052 | 0.029 | 0.027 | 0.078 | 0.000 | 0.000 | 0.091 | 0.079 |
| 3500 | AV | **0.340** | 0.217 | 0.134 | **0.355** | 0.243 | 0.172 | **0.102** | 0.001 | 0.000 | **0.038** | **0.085** |
| SD | 0.067 | 0.055 | 0.042 | 0.057 | 0.036 | 0.033 | 0.093 | 0.005 | 0.000 | 0.091 | 0.096 |
| 3700 | AV | **0.338** | 0.206 | 0.125 | **0.359** | 0.255 | 0.180 | **0.097** | 0.000 | 0.000 | **0.043** | **0.070** |
| SD | 0.065 | 0.048 | 0.047 | 0.056 | 0.034 | 0.030 | 0.095 | 0.000 | 0.000 | 0.100 | 0.090 |
| 3900 | AV | **0.320** | 0.196 | 0.116 | **0.357** | 0.258 | 0.180 | **0.099** | 0.001 | 0.000 | **0.055** | **0.099** |
| SD | 0.071 | 0.041 | 0.039 | 0.045 | 0.032 | 0.034 | 0.101 | 0.005 | 0.000 | 0.109 | 0.099 |

Boolean

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Ans best | Ans 5th | Ans 10th | Classifier best | Classifier 5th | Classifier10th | BF best | BF 5th | BF 10th | SA best | GA best |
| 100 | AV | **0.198** | 0.085 | 0.000 | **0.195** | 0.084 | 0.000 | **0.000** | #DIV/0! | #DIV/0! | **0.000** | **0.008** |
| SD | 0.030 | 0.034 | 0.000 | 0.034 | 0.039 | 0.000 | 0.000 | #DIV/0! | #DIV/0! | 0.000 | 0.038 |
| 300 | AV | **0.196** | 0.115 | 0.020 | **0.219** | 0.138 | 0.057 | **0.002** | 0.000 | #DIV/0! | **0.005** | **0.006** |
| SD | 0.027 | 0.033 | 0.027 | 0.032 | 0.025 | 0.035 | 0.011 | 0.000 | #DIV/0! | 0.023 | 0.024 |
| 500 | AV | **0.204** | 0.133 | 0.051 | **0.211** | 0.147 | 0.076 | **0.005** | 0.000 | 0.000 | **0.000** | **0.009** |
| SD | 0.022 | 0.027 | 0.040 | 0.028 | 0.020 | 0.031 | 0.022 | 0.000 | 0.000 | 0.000 | 0.034 |
| 700 | AV | **0.211** | 0.145 | 0.072 | **0.217** | 0.144 | 0.091 | **0.005** | 0.000 | 0.000 | **0.005** | **0.016** |
| SD | 0.022 | 0.024 | 0.038 | 0.026 | 0.022 | 0.025 | 0.022 | 0.000 | 0.000 | 0.032 | 0.050 |
| 900 | AV | **0.213** | 0.148 | 0.092 | **0.220** | 0.156 | 0.103 | **0.002** | 0.000 | 0.000 | **0.005** | **0.026** |
| SD | 0.024 | 0.024 | 0.031 | 0.031 | 0.021 | 0.022 | 0.011 | 0.000 | 0.000 | 0.033 | 0.061 |
| 1100 | AV | **0.214** | 0.148 | 0.093 | **0.215** | 0.156 | 0.099 | **0.000** | 0.000 | 0.000 | **0.004** | **0.034** |
| SD | 0.023 | 0.022 | 0.029 | 0.026 | 0.024 | 0.024 | 0.000 | 0.000 | 0.000 | 0.022 | 0.068 |
| 1300 | AV | **0.211** | 0.149 | 0.097 | **0.217** | 0.155 | 0.105 | **0.007** | 0.000 | 0.000 | **0.000** | **0.042** |
| SD | 0.024 | 0.020 | 0.025 | 0.029 | 0.019 | 0.024 | 0.026 | 0.000 | 0.000 | 0.000 | 0.061 |
| 1500 | AV | **0.227** | 0.156 | 0.099 | **0.222** | 0.159 | 0.106 | **0.007** | 0.000 | 0.000 | **0.000** | **0.027** |
| SD | 0.030 | 0.019 | 0.026 | 0.031 | 0.015 | 0.024 | 0.029 | 0.000 | 0.000 | 0.000 | 0.054 |
| 1700 | AV | **0.222** | 0.158 | 0.096 | **0.232** | 0.158 | 0.105 | **0.006** | 0.000 | 0.000 | **0.000** | **0.041** |
| SD | 0.026 | 0.014 | 0.025 | 0.031 | 0.020 | 0.026 | 0.026 | 0.000 | 0.000 | 0.000 | 0.064 |
| 1900 | AV | **0.219** | 0.157 | 0.100 | **0.220** | 0.158 | 0.102 | **0.010** | 0.000 | 0.000 | **0.000** | **0.033** |
| SD | 0.024 | 0.020 | 0.023 | 0.030 | 0.021 | 0.024 | 0.039 | 0.000 | 0.000 | 0.000 | 0.057 |
| 2100 | AV | **0.222** | 0.154 | 0.097 | **0.213** | 0.154 | 0.097 | **0.011** | 0.000 | 0.000 | **0.000** | **0.030** |
| SD | 0.029 | 0.024 | 0.028 | 0.029 | 0.015 | 0.022 | 0.036 | 0.000 | 0.000 | 0.000 | 0.054 |
| 2300 | AV | **0.220** | 0.159 | 0.098 | **0.215** | 0.158 | 0.105 | **0.007** | 0.000 | 0.000 | **0.000** | **0.045** |
| SD | 0.029 | 0.019 | 0.028 | 0.026 | 0.017 | 0.024 | 0.032 | 0.000 | 0.000 | 0.000 | 0.063 |
| 2500 | AV | **0.218** | 0.158 | 0.106 | **0.233** | 0.161 | 0.106 | **0.018** | 0.000 | 0.000 | **0.000** | **0.027** |
| SD | 0.029 | 0.021 | 0.024 | 0.034 | 0.020 | 0.023 | 0.044 | 0.000 | 0.000 | 0.000 | 0.054 |
| 2700 | AV | **0.221** | 0.159 | 0.103 | **0.219** | 0.152 | 0.096 | **0.005** | 0.000 | 0.000 | **0.000** | **0.046** |
| SD | 0.024 | 0.022 | 0.025 | 0.028 | 0.024 | 0.021 | 0.019 | 0.000 | 0.000 | 0.000 | 0.070 |
| 2900 | AV | **0.220** | 0.154 | 0.101 | **0.217** | 0.157 | 0.103 | **0.023** | 0.000 | 0.000 | **0.000** | **0.068** |
| SD | 0.032 | 0.022 | 0.021 | 0.026 | 0.019 | 0.023 | 0.044 | 0.000 | 0.000 | 0.000 | 0.076 |
| 3100 | AV | **0.215** | 0.152 | 0.097 | **0.221** | 0.160 | 0.107 | **0.028** | 0.000 | 0.000 | **0.000** | **0.057** |
| SD | 0.023 | 0.022 | 0.027 | 0.022 | 0.019 | 0.025 | 0.069 | 0.000 | 0.000 | 0.000 | 0.066 |
| 3300 | AV | **0.224** | 0.158 | 0.103 | **0.221** | 0.159 | 0.105 | **0.015** | 0.000 | 0.000 | **0.000** | **0.043** |
| SD | 0.032 | 0.016 | 0.024 | 0.025 | 0.019 | 0.022 | 0.039 | 0.000 | 0.000 | 0.000 | 0.066 |
| 3500 | AV | **0.223** | 0.155 | 0.102 | **0.223** | 0.160 | 0.107 | **0.032** | 0.000 | 0.000 | **0.003** | **0.067** |
| SD | 0.033 | 0.022 | 0.027 | 0.022 | 0.016 | 0.020 | 0.072 | 0.000 | 0.000 | 0.021 | 0.081 |
| 3700 | AV | **0.210** | 0.155 | 0.102 | **0.223** | 0.163 | 0.105 | **0.026** | 0.000 | 0.000 | **0.004** | **0.056** |
| SD | 0.025 | 0.017 | 0.025 | 0.030 | 0.022 | 0.024 | 0.061 | 0.000 | 0.000 | 0.024 | 0.067 |
| 3900 | AV | **0.213** | 0.158 | 0.098 | **0.219** | 0.158 | 0.109 | **0.028** | 0.000 | 0.000 | **0.000** | **0.051** |
| SD | 0.021 | 0.021 | 0.027 | 0.028 | 0.017 | 0.024 | 0.081 | 0.000 | 0.000 | 0.000 | 0.064 |

condition

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Ans best | Ans 5th | Ans 10th | Classifier best | Classifier 5th | Classifier10th | BF best | BF 5th | BF 10th | SA best | GA best |
| 100 | AV | **0.776** | 0.175 | 0.001 | **0.775** | 0.178 | 0.001 | **0.015** | #DIV/0! | #DIV/0! | **0.033** | **0.219** |
| SD | 0.158 | 0.111 | 0.003 | 0.180 | 0.111 | 0.005 | 0.045 | #DIV/0! | #DIV/0! | 0.158 | 0.284 |
| 300 | AV | **0.884** | 0.452 | 0.141 | **0.813** | 0.367 | 0.083 | **0.029** | 0.000 | #DIV/0! | **0.035** | **0.318** |
| SD | 0.084 | 0.217 | 0.147 | 0.152 | 0.191 | 0.120 | 0.066 | 0.000 | #DIV/0! | 0.135 | 0.323 |
| 500 | AV | **0.898** | 0.620 | 0.297 | **0.877** | 0.506 | 0.243 | **0.064** | 0.000 | 0.000 | **0.009** | **0.270** |
| SD | 0.055 | 0.157 | 0.170 | 0.055 | 0.229 | 0.194 | 0.177 | 0.000 | 0.000 | 0.038 | 0.250 |
| 700 | AV | **0.924** | 0.673 | 0.366 | **0.904** | 0.664 | 0.374 | **0.072** | 0.000 | 0.000 | **0.066** | **0.230** |
| SD | 0.043 | 0.130 | 0.144 | 0.053 | 0.186 | 0.205 | 0.173 | 0.000 | 0.000 | 0.218 | 0.252 |
| 900 | AV | **0.913** | 0.698 | 0.392 | **0.911** | 0.706 | 0.442 | **0.092** | 0.000 | 0.000 | **0.060** | **0.202** |
| SD | 0.048 | 0.139 | 0.164 | 0.039 | 0.153 | 0.189 | 0.182 | 0.000 | 0.000 | 0.174 | 0.205 |
| 1100 | AV | **0.906** | 0.704 | 0.401 | **0.924** | 0.758 | 0.529 | **0.116** | 0.000 | 0.000 | **0.060** | **0.258** |
| SD | 0.049 | 0.127 | 0.167 | 0.039 | 0.125 | 0.200 | 0.151 | 0.000 | 0.000 | 0.199 | 0.252 |
| 1300 | AV | **0.898** | 0.699 | 0.430 | **0.929** | 0.784 | 0.571 | **0.156** | 0.000 | 0.000 | **0.072** | **0.261** |
| SD | 0.059 | 0.150 | 0.198 | 0.038 | 0.124 | 0.183 | 0.207 | 0.000 | 0.000 | 0.173 | 0.269 |
| 1500 | AV | **0.915** | 0.732 | 0.481 | **0.928** | 0.789 | 0.590 | **0.145** | 0.001 | 0.000 | **0.056** | **0.300** |
| SD | 0.056 | 0.129 | 0.179 | 0.031 | 0.080 | 0.159 | 0.220 | 0.005 | 0.000 | 0.169 | 0.260 |
| 1700 | AV | **0.917** | 0.756 | 0.498 | **0.913** | 0.801 | 0.621 | **0.126** | 0.000 | 0.000 | **0.087** | **0.206** |
| SD | 0.055 | 0.126 | 0.180 | 0.061 | 0.089 | 0.144 | 0.205 | 0.000 | 0.000 | 0.225 | 0.244 |
| 1900 | AV | **0.917** | 0.751 | 0.493 | **0.927** | 0.816 | 0.657 | **0.099** | 0.000 | 0.000 | **0.038** | **0.287** |
| SD | 0.067 | 0.151 | 0.204 | 0.031 | 0.068 | 0.120 | 0.115 | 0.000 | 0.000 | 0.096 | 0.287 |
| 2100 | AV | **0.919** | 0.772 | 0.514 | **0.928** | 0.828 | 0.656 | **0.156** | 0.000 | 0.000 | **0.014** | **0.263** |
| SD | 0.044 | 0.105 | 0.198 | 0.029 | 0.068 | 0.121 | 0.232 | 0.000 | 0.000 | 0.051 | 0.271 |
| 2300 | AV | **0.932** | 0.792 | 0.551 | **0.936** | 0.834 | 0.682 | **0.168** | 0.001 | 0.000 | **0.103** | **0.282** |
| SD | 0.046 | 0.128 | 0.177 | 0.021 | 0.061 | 0.110 | 0.257 | 0.005 | 0.000 | 0.235 | 0.269 |
| 2500 | AV | **0.930** | 0.795 | 0.594 | **0.936** | 0.833 | 0.690 | **0.167** | 0.001 | 0.000 | **0.099** | **0.292** |
| SD | 0.031 | 0.098 | 0.183 | 0.030 | 0.049 | 0.099 | 0.187 | 0.005 | 0.000 | 0.234 | 0.255 |
| 2700 | AV | **0.926** | 0.779 | 0.586 | **0.936** | 0.843 | 0.722 | **0.193** | 0.000 | 0.000 | **0.040** | **0.283** |
| SD | 0.041 | 0.144 | 0.201 | 0.026 | 0.042 | 0.071 | 0.252 | 0.000 | 0.000 | 0.163 | 0.246 |
| 2900 | AV | **0.926** | 0.789 | 0.586 | **0.937** | 0.846 | 0.712 | **0.268** | 0.001 | 0.000 | **0.073** | **0.253** |
| SD | 0.036 | 0.133 | 0.176 | 0.034 | 0.045 | 0.090 | 0.285 | 0.005 | 0.000 | 0.170 | 0.256 |
| 3100 | AV | **0.931** | 0.796 | 0.613 | **0.945** | 0.853 | 0.726 | **0.268** | 0.006 | 0.000 | **0.048** | **0.218** |
| SD | 0.040 | 0.145 | 0.194 | 0.021 | 0.043 | 0.085 | 0.272 | 0.015 | 0.000 | 0.121 | 0.249 |
| 3300 | AV | **0.934** | 0.822 | 0.648 | **0.943** | 0.844 | 0.724 | **0.228** | 0.002 | 0.000 | **0.095** | **0.282** |
| SD | 0.033 | 0.098 | 0.150 | 0.029 | 0.051 | 0.089 | 0.212 | 0.007 | 0.000 | 0.212 | 0.237 |
| 3500 | AV | **0.951** | 0.830 | 0.671 | **0.944** | 0.855 | 0.737 | **0.273** | 0.004 | 0.000 | **0.097** | **0.334** |
| SD | 0.027 | 0.102 | 0.140 | 0.025 | 0.041 | 0.087 | 0.271 | 0.011 | 0.000 | 0.204 | 0.298 |
| 3700 | AV | **0.937** | 0.830 | 0.666 | **0.942** | 0.865 | 0.751 | **0.274** | 0.003 | 0.000 | **0.084** | **0.168** |
| SD | 0.052 | 0.088 | 0.150 | 0.019 | 0.033 | 0.063 | 0.247 | 0.009 | 0.000 | 0.210 | 0.162 |
| 3900 | AV | **0.950** | 0.851 | 0.687 | **0.946** | 0.862 | 0.737 | **0.313** | 0.005 | 0.000 | **0.065** | **0.247** |
| SD | 0.025 | 0.064 | 0.137 | 0.022 | 0.044 | 0.079 | 0.250 | 0.014 | 0.000 | 0.176 | 0.267 |

Barrier

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Ans best | Ans 5th | Ans 10th | Classifier best | Classifier 5th | Classifier10th | BF best | BF 5th | BF 10th | SA best | GA best |
| 100 | AV | **0.432** | 0.144 | 0.000 | **0.427** | 0.159 | 0.000 | **0.000** | #DIV/0! | #DIV/0! | **0.000** | **0.000** |
| SD | 0.074 | 0.079 | 0.000 | 0.078 | 0.082 | 0.000 | 0.000 | #DIV/0! | #DIV/0! | 0.000 | 0.000 |
| 300 | AV | **0.430** | 0.246 | 0.039 | **0.465** | 0.321 | 0.164 | **0.000** | 0.000 | #DIV/0! | **0.000** | **0.019** |
| SD | 0.053 | 0.074 | 0.050 | 0.047 | 0.047 | 0.070 | 0.000 | 0.000 | #DIV/0! | 0.000 | 0.083 |
| 500 | AV | **0.465** | 0.320 | 0.172 | **0.473** | 0.355 | 0.229 | **0.005** | 0.000 | 0.000 | **0.000** | **0.001** |
| SD | 0.055 | 0.072 | 0.088 | 0.045 | 0.052 | 0.063 | 0.032 | 0.000 | 0.000 | 0.000 | 0.006 |
| 700 | AV | **0.483** | 0.354 | 0.224 | **0.491** | 0.364 | 0.261 | **0.000** | 0.000 | 0.000 | **0.000** | **0.008** |
| SD | 0.047 | 0.059 | 0.077 | 0.056 | 0.038 | 0.048 | 0.000 | 0.000 | 0.000 | 0.000 | 0.051 |
| 900 | AV | **0.491** | 0.370 | 0.256 | **0.496** | 0.361 | 0.259 | **0.000** | 0.000 | 0.000 | **0.000** | **0.010** |
| SD | 0.055 | 0.037 | 0.066 | 0.050 | 0.037 | 0.052 | 0.000 | 0.000 | 0.000 | 0.000 | 0.046 |
| 1100 | AV | **0.498** | 0.386 | 0.268 | **0.486** | 0.372 | 0.261 | **0.000** | 0.000 | 0.000 | **0.000** | **0.010** |
| SD | 0.049 | 0.037 | 0.056 | 0.054 | 0.038 | 0.054 | 0.000 | 0.000 | 0.000 | 0.000 | 0.043 |
| 1300 | AV | **0.498** | 0.390 | 0.275 | **0.488** | 0.374 | 0.271 | **0.001** | 0.000 | 0.000 | **0.000** | **0.005** |
| SD | 0.049 | 0.040 | 0.055 | 0.052 | 0.033 | 0.050 | 0.005 | 0.000 | 0.000 | 0.000 | 0.033 |
| 1500 | AV | **0.503** | 0.386 | 0.295 | **0.501** | 0.375 | 0.265 | **0.003** | 0.000 | 0.000 | **0.000** | **0.006** |
| SD | 0.051 | 0.040 | 0.048 | 0.059 | 0.033 | 0.048 | 0.016 | 0.000 | 0.000 | 0.000 | 0.035 |
| 1700 | AV | **0.490** | 0.383 | 0.285 | **0.500** | 0.373 | 0.263 | **0.010** | 0.000 | 0.000 | **0.000** | **0.026** |
| SD | 0.040 | 0.034 | 0.048 | 0.049 | 0.033 | 0.050 | 0.063 | 0.000 | 0.000 | 0.000 | 0.080 |
| 1900 | AV | **0.491** | 0.388 | 0.285 | **0.492** | 0.375 | 0.268 | **0.000** | 0.000 | 0.000 | **0.000** | **0.017** |
| SD | 0.043 | 0.035 | 0.049 | 0.053 | 0.029 | 0.041 | 0.000 | 0.000 | 0.000 | 0.000 | 0.065 |
| 2100 | AV | **0.495** | 0.391 | 0.286 | **0.480** | 0.366 | 0.265 | **0.000** | 0.000 | 0.000 | **0.000** | **0.028** |
| SD | 0.053 | 0.038 | 0.047 | 0.061 | 0.030 | 0.041 | 0.000 | 0.000 | 0.000 | 0.000 | 0.103 |
| 2300 | AV | **0.499** | 0.390 | 0.295 | **0.480** | 0.382 | 0.284 | **0.001** | 0.000 | 0.000 | **0.000** | **0.055** |
| SD | 0.049 | 0.032 | 0.040 | 0.035 | 0.033 | 0.047 | 0.005 | 0.000 | 0.000 | 0.000 | 0.121 |
| 2500 | AV | **0.482** | 0.383 | 0.284 | **0.480** | 0.370 | 0.271 | **0.003** | 0.000 | 0.000 | **0.000** | **0.033** |
| SD | 0.054 | 0.039 | 0.054 | 0.051 | 0.033 | 0.039 | 0.015 | 0.000 | 0.000 | 0.000 | 0.092 |
| 2700 | AV | **0.498** | 0.388 | 0.287 | **0.496** | 0.381 | 0.277 | **0.000** | 0.000 | 0.000 | **0.000** | **0.060** |
| SD | 0.049 | 0.028 | 0.043 | 0.049 | 0.030 | 0.047 | 0.000 | 0.000 | 0.000 | 0.000 | 0.123 |
| 2900 | AV | **0.497** | 0.398 | 0.305 | **0.484** | 0.379 | 0.288 | **0.001** | 0.000 | 0.000 | **0.000** | **0.009** |
| SD | 0.035 | 0.029 | 0.044 | 0.048 | 0.030 | 0.041 | 0.005 | 0.000 | 0.000 | 0.000 | 0.039 |
| 3100 | AV | **0.493** | 0.388 | 0.288 | **0.489** | 0.372 | 0.264 | **0.002** | 0.000 | 0.000 | **0.000** | **0.032** |
| SD | 0.037 | 0.041 | 0.056 | 0.045 | 0.024 | 0.039 | 0.011 | 0.000 | 0.000 | 0.000 | 0.084 |
| 3300 | AV | **0.498** | 0.381 | 0.278 | **0.496** | 0.376 | 0.272 | **0.000** | 0.000 | 0.000 | **0.000** | **0.044** |
| SD | 0.056 | 0.034 | 0.053 | 0.053 | 0.037 | 0.054 | 0.000 | 0.000 | 0.000 | 0.000 | 0.106 |
| 3500 | AV | **0.495** | 0.394 | 0.291 | **0.494** | 0.380 | 0.274 | **0.009** | 0.000 | 0.000 | **0.000** | **0.051** |
| SD | 0.050 | 0.039 | 0.036 | 0.041 | 0.027 | 0.033 | 0.043 | 0.000 | 0.000 | 0.000 | 0.121 |
| 3700 | AV | **0.493** | 0.378 | 0.279 | **0.487** | 0.373 | 0.282 | **0.028** | 0.000 | 0.000 | **0.000** | **0.033** |
| SD | 0.053 | 0.036 | 0.055 | 0.039 | 0.033 | 0.047 | 0.095 | 0.000 | 0.000 | 0.000 | 0.108 |
| 3900 | AV | **0.489** | 0.384 | 0.277 | **0.481** | 0.371 | 0.282 | **0.006** | 0.000 | 0.000 | **0.000** | **0.017** |
| SD | 0.050 | 0.031 | 0.046 | 0.053 | 0.032 | 0.044 | 0.037 | 0.000 | 0.000 | 0.000 | 0.060 |

Semaphore

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Ans best | Ans 5th | Ans 10th | Classifier best | Classifier 5th | Classifier10th | BF best | BF 5th | BF 10th | SA best | GA best |
| 100 | AV | **0.428** | 0.142 | 0.000 | **0.430** | 0.149 | 0.000 | **0.000** | #DIV/0! | #DIV/0! | **0.000** | **0.000** |
| SD | 0.061 | 0.080 | 0.000 | 0.061 | 0.081 | 0.000 | 0.000 | #DIV/0! | #DIV/0! | 0.000 | 0.000 |
| 300 | AV | **0.448** | 0.272 | 0.047 | **0.473** | 0.336 | 0.190 | **0.002** | 0.000 | #DIV/0! | **0.000** | **0.000** |
| SD | 0.058 | 0.078 | 0.061 | 0.050 | 0.054 | 0.078 | 0.011 | 0.000 | #DIV/0! | 0.000 | 0.000 |
| 500 | AV | **0.482** | 0.339 | 0.171 | **0.477** | 0.366 | 0.239 | **0.003** | 0.000 | 0.000 | **0.000** | **0.007** |
| SD | 0.056 | 0.052 | 0.092 | 0.035 | 0.039 | 0.055 | 0.021 | 0.000 | 0.000 | 0.000 | 0.043 |
| 700 | AV | **0.484** | 0.365 | 0.238 | **0.491** | 0.366 | 0.258 | **0.000** | 0.000 | 0.000 | **0.000** | **0.000** |
| SD | 0.045 | 0.043 | 0.067 | 0.053 | 0.032 | 0.049 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 900 | AV | **0.493** | 0.372 | 0.261 | **0.481** | 0.366 | 0.253 | **0.000** | 0.000 | 0.000 | **0.000** | **0.008** |
| SD | 0.049 | 0.042 | 0.057 | 0.043 | 0.037 | 0.051 | 0.000 | 0.000 | 0.000 | 0.000 | 0.051 |
| 1100 | AV | **0.501** | 0.381 | 0.274 | **0.481** | 0.365 | 0.261 | **0.018** | 0.000 | 0.000 | **0.000** | **0.041** |
| SD | 0.050 | 0.041 | 0.056 | 0.039 | 0.039 | 0.055 | 0.081 | 0.000 | 0.000 | 0.000 | 0.111 |
| 1300 | AV | **0.490** | 0.377 | 0.270 | **0.482** | 0.376 | 0.259 | **0.000** | 0.000 | 0.000 | **0.000** | **0.017** |
| SD | 0.049 | 0.046 | 0.057 | 0.048 | 0.037 | 0.051 | 0.000 | 0.000 | 0.000 | 0.000 | 0.074 |
| 1500 | AV | **0.494** | 0.389 | 0.290 | **0.497** | 0.374 | 0.270 | **0.003** | 0.000 | 0.000 | **0.000** | **0.023** |
| SD | 0.043 | 0.041 | 0.054 | 0.053 | 0.032 | 0.049 | 0.021 | 0.000 | 0.000 | 0.000 | 0.086 |
| 1700 | AV | **0.512** | 0.384 | 0.273 | **0.504** | 0.382 | 0.263 | **0.000** | 0.000 | 0.000 | **0.000** | **0.045** |
| SD | 0.065 | 0.039 | 0.057 | 0.044 | 0.032 | 0.060 | 0.000 | 0.000 | 0.000 | 0.000 | 0.114 |
| 1900 | AV | **0.503** | 0.389 | 0.273 | **0.487** | 0.376 | 0.275 | **0.008** | 0.000 | 0.000 | **0.000** | **0.019** |
| SD | 0.050 | 0.030 | 0.052 | 0.054 | 0.037 | 0.052 | 0.034 | 0.000 | 0.000 | 0.000 | 0.076 |
| 2100 | AV | **0.499** | 0.386 | 0.280 | **0.499** | 0.390 | 0.276 | **0.000** | 0.000 | 0.000 | **0.000** | **0.064** |
| SD | 0.054 | 0.036 | 0.051 | 0.049 | 0.029 | 0.055 | 0.000 | 0.000 | 0.000 | 0.000 | 0.150 |
| 2300 | AV | **0.503** | 0.384 | 0.288 | **0.501** | 0.387 | 0.275 | **0.001** | 0.000 | 0.000 | **0.000** | **0.049** |
| SD | 0.051 | 0.040 | 0.058 | 0.045 | 0.034 | 0.054 | 0.005 | 0.000 | 0.000 | 0.000 | 0.116 |
| 2500 | AV | **0.509** | 0.393 | 0.293 | **0.485** | 0.368 | 0.267 | **0.002** | 0.000 | 0.000 | **0.009** | **0.033** |
| SD | 0.069 | 0.033 | 0.044 | 0.058 | 0.037 | 0.050 | 0.011 | 0.000 | 0.000 | 0.055 | 0.078 |
| 2700 | AV | **0.511** | 0.391 | 0.297 | **0.490** | 0.385 | 0.270 | **0.005** | 0.000 | 0.000 | **0.000** | **0.010** |
| SD | 0.058 | 0.037 | 0.054 | 0.053 | 0.034 | 0.053 | 0.032 | 0.000 | 0.000 | 0.000 | 0.053 |
| 2900 | AV | **0.504** | 0.384 | 0.292 | **0.498** | 0.384 | 0.280 | **0.002** | 0.000 | 0.000 | **0.000** | **0.022** |
| SD | 0.071 | 0.032 | 0.051 | 0.047 | 0.028 | 0.046 | 0.011 | 0.000 | 0.000 | 0.000 | 0.072 |
| 3100 | AV | **0.505** | 0.383 | 0.289 | **0.496** | 0.388 | 0.282 | **0.023** | 0.000 | 0.000 | **0.000** | **0.049** |
| SD | 0.063 | 0.041 | 0.043 | 0.045 | 0.034 | 0.051 | 0.084 | 0.000 | 0.000 | 0.000 | 0.125 |
| 3300 | AV | **0.495** | 0.385 | 0.298 | **0.506** | 0.377 | 0.264 | **0.019** | 0.000 | 0.000 | **0.011** | **0.035** |
| SD | 0.059 | 0.036 | 0.042 | 0.053 | 0.043 | 0.054 | 0.096 | 0.000 | 0.000 | 0.068 | 0.103 |
| 3500 | AV | **0.497** | 0.393 | 0.305 | **0.502** | 0.369 | 0.277 | **0.003** | 0.000 | 0.000 | **0.000** | **0.021** |
| SD | 0.057 | 0.033 | 0.048 | 0.046 | 0.034 | 0.052 | 0.017 | 0.000 | 0.000 | 0.000 | 0.080 |
| 3700 | AV | **0.504** | 0.389 | 0.288 | **0.501** | 0.374 | 0.276 | **0.008** | 0.000 | 0.000 | **0.000** | **0.038** |
| SD | 0.052 | 0.037 | 0.040 | 0.053 | 0.032 | 0.052 | 0.029 | 0.000 | 0.000 | 0.000 | 0.110 |
| 3900 | AV | **0.492** | 0.372 | 0.281 | **0.508** | 0.385 | 0.284 | **0.000** | 0.000 | 0.000 | **0.000** | **0.018** |
| SD | 0.046 | 0.038 | 0.056 | 0.058 | 0.033 | 0.051 | 0.000 | 0.000 | 0.000 | 0.000 | 0.063 |

Lock

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Ans best | Ans 5th | Ans 10th | Classifier best | Classifier 5th | Classifier10th | BF best | BF 5th | BF 10th | SA best | GA best |
| 100 | AV | **0.141** | 0.089 | 0.001 | **0.146** | 0.099 | 0.038 | **0.019** | #DIV/0! | #DIV/0! | **0.000** | **0.049** |
| SD | 0.020 | 0.016 | 0.003 | 0.020 | 0.018 | 0.034 | 0.044 | #DIV/0! | #DIV/0! | 0.000 | 0.050 |
| 300 | AV | **0.147** | 0.105 | 0.074 | **0.157** | 0.115 | 0.090 | **0.017** | 0.000 | #DIV/0! | **0.007** | **0.053** |
| SD | 0.021 | 0.011 | 0.018 | 0.020 | 0.012 | 0.009 | 0.041 | 0.000 | #DIV/0! | 0.027 | 0.050 |
| 500 | AV | **0.151** | 0.114 | 0.087 | **0.154** | 0.115 | 0.089 | **0.042** | 0.000 | 0.000 | **0.016** | **0.086** |
| SD | 0.017 | 0.010 | 0.010 | 0.021 | 0.010 | 0.011 | 0.068 | 0.000 | 0.000 | 0.035 | 0.045 |
| 700 | AV | **0.160** | 0.116 | 0.090 | **0.157** | 0.114 | 0.091 | **0.052** | 0.000 | 0.000 | **0.006** | **0.069** |
| SD | 0.021 | 0.011 | 0.009 | 0.022 | 0.011 | 0.011 | 0.075 | 0.000 | 0.000 | 0.024 | 0.050 |
| 900 | AV | **0.154** | 0.111 | 0.086 | **0.153** | 0.113 | 0.087 | **0.068** | 0.000 | 0.000 | **0.005** | **0.081** |
| SD | 0.020 | 0.012 | 0.008 | 0.018 | 0.011 | 0.010 | 0.071 | 0.000 | 0.000 | 0.024 | 0.052 |
| 1100 | AV | **0.156** | 0.113 | 0.086 | **0.164** | 0.114 | 0.090 | **0.067** | 0.000 | 0.000 | **0.009** | **0.089** |
| SD | 0.017 | 0.012 | 0.011 | 0.023 | 0.011 | 0.011 | 0.071 | 0.000 | 0.000 | 0.032 | 0.032 |
| 1300 | AV | **0.154** | 0.114 | 0.087 | **0.147** | 0.111 | 0.087 | **0.106** | 0.000 | 0.000 | **0.016** | **0.090** |
| SD | 0.022 | 0.011 | 0.010 | 0.016 | 0.011 | 0.010 | 0.073 | 0.000 | 0.000 | 0.045 | 0.044 |
| 1500 | AV | **0.151** | 0.113 | 0.085 | **0.159** | 0.114 | 0.089 | **0.096** | 0.000 | 0.000 | **0.003** | **0.082** |
| SD | 0.019 | 0.011 | 0.011 | 0.023 | 0.011 | 0.010 | 0.068 | 0.000 | 0.000 | 0.015 | 0.044 |
| 1700 | AV | **0.159** | 0.113 | 0.087 | **0.156** | 0.113 | 0.087 | **0.090** | 0.002 | 0.000 | **0.012** | **0.095** |
| SD | 0.021 | 0.013 | 0.010 | 0.020 | 0.013 | 0.010 | 0.069 | 0.011 | 0.000 | 0.032 | 0.043 |
| 1900 | AV | **0.149** | 0.115 | 0.088 | **0.156** | 0.113 | 0.087 | **0.082** | 0.000 | 0.000 | **0.009** | **0.092** |
| SD | 0.018 | 0.010 | 0.011 | 0.021 | 0.013 | 0.011 | 0.076 | 0.000 | 0.000 | 0.026 | 0.038 |
| 2100 | AV | **0.152** | 0.113 | 0.087 | **0.156** | 0.117 | 0.091 | **0.108** | 0.000 | 0.000 | **0.007** | **0.092** |
| SD | 0.014 | 0.008 | 0.011 | 0.018 | 0.011 | 0.011 | 0.078 | 0.000 | 0.000 | 0.033 | 0.032 |
| 2300 | AV | **0.152** | 0.107 | 0.083 | **0.158** | 0.116 | 0.089 | **0.125** | 0.003 | 0.000 | **0.007** | **0.100** |
| SD | 0.018 | 0.013 | 0.010 | 0.019 | 0.012 | 0.009 | 0.066 | 0.016 | 0.000 | 0.025 | 0.035 |
| 2500 | AV | **0.156** | 0.114 | 0.086 | **0.156** | 0.115 | 0.088 | **0.104** | 0.003 | 0.000 | **0.012** | **0.097** |
| SD | 0.021 | 0.009 | 0.010 | 0.017 | 0.010 | 0.010 | 0.056 | 0.012 | 0.000 | 0.033 | 0.039 |
| 2700 | AV | **0.156** | 0.113 | 0.090 | **0.155** | 0.112 | 0.085 | **0.117** | 0.006 | 0.000 | **0.012** | **0.087** |
| SD | 0.015 | 0.009 | 0.009 | 0.019 | 0.010 | 0.011 | 0.072 | 0.018 | 0.000 | 0.031 | 0.036 |
| 2900 | AV | **0.153** | 0.112 | 0.086 | **0.150** | 0.113 | 0.089 | **0.116** | 0.006 | 0.000 | **0.009** | **0.102** |
| SD | 0.021 | 0.011 | 0.008 | 0.015 | 0.008 | 0.009 | 0.051 | 0.020 | 0.000 | 0.028 | 0.030 |
| 3100 | AV | **0.151** | 0.111 | 0.087 | **0.156** | 0.114 | 0.089 | **0.117** | 0.003 | 0.000 | **0.013** | **0.093** |
| SD | 0.024 | 0.010 | 0.008 | 0.022 | 0.011 | 0.009 | 0.053 | 0.016 | 0.000 | 0.034 | 0.032 |
| 3300 | AV | **0.155** | 0.112 | 0.086 | **0.149** | 0.112 | 0.090 | **0.120** | 0.013 | 0.000 | **0.016** | **0.092** |
| SD | 0.018 | 0.010 | 0.010 | 0.015 | 0.011 | 0.011 | 0.054 | 0.030 | 0.000 | 0.040 | 0.034 |
| 3500 | AV | **0.156** | 0.113 | 0.087 | **0.151** | 0.115 | 0.086 | **0.126** | 0.008 | 0.000 | **0.015** | **0.098** |
| SD | 0.020 | 0.011 | 0.011 | 0.016 | 0.012 | 0.008 | 0.074 | 0.021 | 0.000 | 0.041 | 0.037 |
| 3700 | AV | **0.154** | 0.111 | 0.088 | **0.153** | 0.113 | 0.086 | **0.121** | 0.017 | 0.000 | **0.016** | **0.089** |
| SD | 0.015 | 0.009 | 0.009 | 0.018 | 0.012 | 0.010 | 0.058 | 0.038 | 0.000 | 0.037 | 0.032 |
| 3900 | AV | **0.154** | 0.113 | 0.086 | **0.153** | 0.116 | 0.089 | **0.159** | 0.015 | 0.000 | **0.003** | **0.104** |
| SD | 0.024 | 0.011 | 0.010 | 0.019 | 0.014 | 0.012 | 0.050 | 0.026 | 0.000 | 0.014 | 0.032 |

Complex

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Ans best | Ans 5th | Ans 10th | Classifier best | Classifier 5th | Classifier10th | BF best | BF 5th | BF 10th | SA best | GA best |
| 100 | AV | **0.464** | 0.156 | 0.004 | **0.477** | 0.155 | 0.009 | **0.007** | #DIV/0! | #DIV/0! | **0.002** | **0.084** |
| SD | 0.130 | 0.075 | 0.013 | 0.121 | 0.076 | 0.027 | 0.022 | #DIV/0! | #DIV/0! | 0.011 | 0.129 |
| 300 | AV | **0.601** | 0.394 | 0.226 | **0.603** | 0.400 | 0.260 | **0.037** | 0.000 | #DIV/0! | **0.000** | **0.135** |
| SD | 0.092 | 0.075 | 0.086 | 0.092 | 0.064 | 0.057 | 0.121 | 0.000 | #DIV/0! | 0.000 | 0.165 |
| 500 | AV | **0.648** | 0.452 | 0.306 | **0.611** | 0.420 | 0.291 | **0.028** | 0.000 | 0.000 | **0.036** | **0.131** |
| SD | 0.101 | 0.079 | 0.080 | 0.084 | 0.069 | 0.063 | 0.096 | 0.000 | 0.000 | 0.122 | 0.116 |
| 700 | AV | **0.658** | 0.469 | 0.327 | **0.632** | 0.444 | 0.312 | **0.049** | 0.000 | 0.000 | **0.000** | **0.128** |
| SD | 0.080 | 0.060 | 0.060 | 0.075 | 0.069 | 0.073 | 0.104 | 0.000 | 0.000 | 0.000 | 0.132 |
| 900 | AV | **0.669** | 0.473 | 0.351 | **0.634** | 0.456 | 0.324 | **0.091** | 0.000 | 0.000 | **0.002** | **0.167** |
| SD | 0.067 | 0.066 | 0.065 | 0.075 | 0.061 | 0.061 | 0.134 | 0.000 | 0.000 | 0.009 | 0.129 |
| 1100 | AV | **0.657** | 0.489 | 0.353 | **0.635** | 0.456 | 0.342 | **0.058** | 0.000 | 0.000 | **0.001** | **0.208** |
| SD | 0.078 | 0.071 | 0.072 | 0.076 | 0.063 | 0.063 | 0.105 | 0.000 | 0.000 | 0.005 | 0.188 |
| 1300 | AV | **0.639** | 0.474 | 0.348 | **0.638** | 0.472 | 0.355 | **0.054** | 0.000 | 0.000 | **0.007** | **0.173** |
| SD | 0.096 | 0.084 | 0.068 | 0.086 | 0.053 | 0.051 | 0.075 | 0.000 | 0.000 | 0.031 | 0.149 |
| 1500 | AV | **0.669** | 0.489 | 0.354 | **0.660** | 0.495 | 0.365 | **0.095** | 0.000 | 0.000 | **0.005** | **0.164** |
| SD | 0.076 | 0.077 | 0.076 | 0.078 | 0.061 | 0.052 | 0.128 | 0.000 | 0.000 | 0.024 | 0.144 |
| 1700 | AV | **0.673** | 0.473 | 0.347 | **0.651** | 0.484 | 0.364 | **0.090** | 0.000 | 0.000 | **0.037** | **0.209** |
| SD | 0.093 | 0.087 | 0.078 | 0.081 | 0.065 | 0.057 | 0.116 | 0.000 | 0.000 | 0.105 | 0.138 |
| 1900 | AV | **0.656** | 0.483 | 0.346 | **0.644** | 0.487 | 0.375 | **0.105** | 0.000 | 0.000 | **0.003** | **0.222** |
| SD | 0.080 | 0.070 | 0.076 | 0.073 | 0.056 | 0.041 | 0.114 | 0.000 | 0.000 | 0.021 | 0.156 |
| 2100 | AV | **0.657** | 0.483 | 0.346 | **0.662** | 0.489 | 0.382 | **0.127** | 0.000 | 0.000 | **0.011** | **0.195** |
| SD | 0.091 | 0.079 | 0.088 | 0.074 | 0.056 | 0.055 | 0.174 | 0.000 | 0.000 | 0.045 | 0.160 |
| 2300 | AV | **0.671** | 0.484 | 0.342 | **0.662** | 0.509 | 0.380 | **0.108** | 0.000 | 0.000 | **0.006** | **0.164** |
| SD | 0.092 | 0.085 | 0.083 | 0.070 | 0.057 | 0.046 | 0.120 | 0.000 | 0.000 | 0.033 | 0.141 |
| 2500 | AV | **0.663** | 0.489 | 0.346 | **0.679** | 0.500 | 0.386 | **0.118** | 0.001 | 0.000 | **0.005** | **0.229** |
| SD | 0.090 | 0.086 | 0.078 | 0.072 | 0.062 | 0.051 | 0.160 | 0.005 | 0.000 | 0.030 | 0.175 |
| 2700 | AV | **0.682** | 0.499 | 0.361 | **0.661** | 0.503 | 0.391 | **0.128** | 0.001 | 0.000 | **0.006** | **0.172** |
| SD | 0.078 | 0.095 | 0.088 | 0.076 | 0.062 | 0.052 | 0.151 | 0.005 | 0.000 | 0.029 | 0.142 |
| 2900 | AV | **0.676** | 0.498 | 0.352 | **0.666** | 0.511 | 0.399 | **0.147** | 0.000 | 0.000 | **0.004** | **0.219** |
| SD | 0.087 | 0.086 | 0.083 | 0.064 | 0.063 | 0.048 | 0.157 | 0.000 | 0.000 | 0.024 | 0.141 |
| 3100 | AV | **0.681** | 0.498 | 0.367 | **0.672** | 0.494 | 0.385 | **0.151** | 0.003 | 0.000 | **0.022** | **0.197** |
| SD | 0.097 | 0.097 | 0.095 | 0.066 | 0.050 | 0.052 | 0.149 | 0.012 | 0.000 | 0.071 | 0.176 |
| 3300 | AV | **0.673** | 0.512 | 0.381 | **0.667** | 0.511 | 0.397 | **0.152** | 0.001 | 0.000 | **0.000** | **0.152** |
| SD | 0.099 | 0.091 | 0.086 | 0.061 | 0.052 | 0.051 | 0.152 | 0.005 | 0.000 | 0.002 | 0.138 |
| 3500 | AV | **0.691** | 0.531 | 0.396 | **0.692** | 0.533 | 0.412 | **0.161** | 0.000 | 0.000 | **0.000** | **0.183** |
| SD | 0.082 | 0.092 | 0.075 | 0.054 | 0.046 | 0.049 | 0.161 | 0.000 | 0.000 | 0.000 | 0.138 |
| 3700 | AV | **0.682** | 0.512 | 0.380 | **0.694** | 0.528 | 0.412 | **0.173** | 0.005 | 0.000 | **0.006** | **0.177** |
| SD | 0.097 | 0.092 | 0.091 | 0.054 | 0.040 | 0.036 | 0.141 | 0.018 | 0.000 | 0.032 | 0.136 |
| 3900 | AV | **0.683** | 0.529 | 0.382 | **0.678** | 0.529 | 0.416 | **0.155** | 0.003 | 0.000 | **0.034** | **0.207** |
| SD | 0.072 | 0.076 | 0.080 | 0.069 | 0.054 | 0.058 | 0.119 | 0.009 | 0.000 | 0.121 | 0.169 |

Dragons

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | Ans best | Ans 5th | Ans 10th | Classifier best | Classifier 5th | Classifier10th | BF best | BF 5th | BF 10th | SA best | GA best |
| 100 | AV | **0.275** | 0.122 | 0.001 | **0.279** | 0.118 | 0.000 | **0.026** | #DIV/0! | #DIV/0! | **0.002** | **0.084** |
| SD | 0.039 | 0.050 | 0.006 | 0.034 | 0.053 | 0.000 | 0.066 | #DIV/0! | #DIV/0! | 0.010 | 0.100 |
| 300 | AV | **0.287** | 0.166 | 0.018 | **0.289** | 0.177 | 0.028 | **0.012** | 0.000 | #DIV/0! | **0.010** | **0.122** |
| SD | 0.035 | 0.042 | 0.027 | 0.042 | 0.055 | 0.045 | 0.044 | 0.000 | #DIV/0! | 0.044 | 0.102 |
| 500 | AV | **0.290** | 0.189 | 0.071 | **0.285** | 0.186 | 0.060 | **0.049** | 0.000 | 0.000 | **0.011** | **0.139** |
| SD | 0.027 | 0.036 | 0.054 | 0.040 | 0.049 | 0.057 | 0.093 | 0.000 | 0.000 | 0.047 | 0.099 |
| 700 | AV | **0.296** | 0.200 | 0.098 | **0.297** | 0.210 | 0.093 | **0.036** | 0.000 | 0.000 | **0.012** | **0.140** |
| SD | 0.040 | 0.035 | 0.048 | 0.035 | 0.033 | 0.065 | 0.082 | 0.000 | 0.000 | 0.052 | 0.096 |
| 900 | AV | **0.304** | 0.212 | 0.116 | **0.289** | 0.216 | 0.121 | **0.060** | 0.000 | 0.000 | **0.010** | **0.135** |
| SD | 0.031 | 0.030 | 0.047 | 0.028 | 0.031 | 0.057 | 0.098 | 0.000 | 0.000 | 0.049 | 0.103 |
| 1100 | AV | **0.303** | 0.219 | 0.125 | **0.303** | 0.218 | 0.134 | **0.057** | 0.000 | 0.000 | **0.013** | **0.162** |
| SD | 0.034 | 0.030 | 0.041 | 0.030 | 0.033 | 0.049 | 0.088 | 0.000 | 0.000 | 0.056 | 0.087 |
| 1300 | AV | **0.294** | 0.224 | 0.137 | **0.299** | 0.222 | 0.127 | **0.059** | 0.000 | 0.000 | **0.018** | **0.138** |
| SD | 0.031 | 0.028 | 0.034 | 0.037 | 0.028 | 0.045 | 0.098 | 0.000 | 0.000 | 0.063 | 0.097 |
| 1500 | AV | **0.296** | 0.225 | 0.140 | **0.308** | 0.220 | 0.144 | **0.074** | 0.000 | 0.000 | **0.007** | **0.150** |
| SD | 0.032 | 0.026 | 0.036 | 0.034 | 0.029 | 0.046 | 0.107 | 0.000 | 0.000 | 0.041 | 0.096 |
| 1700 | AV | **0.303** | 0.220 | 0.136 | **0.305** | 0.225 | 0.142 | **0.097** | 0.000 | 0.000 | **0.018** | **0.148** |
| SD | 0.031 | 0.026 | 0.033 | 0.033 | 0.031 | 0.041 | 0.107 | 0.000 | 0.000 | 0.071 | 0.091 |
| 1900 | AV | **0.308** | 0.218 | 0.136 | **0.299** | 0.223 | 0.137 | **0.108** | 0.000 | 0.000 | **0.019** | **0.151** |
| SD | 0.030 | 0.025 | 0.031 | 0.032 | 0.028 | 0.039 | 0.111 | 0.000 | 0.000 | 0.063 | 0.088 |
| 2100 | AV | **0.308** | 0.220 | 0.140 | **0.306** | 0.221 | 0.140 | **0.067** | 0.000 | 0.000 | **0.005** | **0.160** |
| SD | 0.038 | 0.032 | 0.032 | 0.033 | 0.028 | 0.039 | 0.100 | 0.000 | 0.000 | 0.028 | 0.085 |
| 2300 | AV | **0.304** | 0.223 | 0.139 | **0.303** | 0.221 | 0.140 | **0.099** | 0.000 | 0.000 | **0.024** | **0.163** |
| SD | 0.035 | 0.030 | 0.040 | 0.028 | 0.027 | 0.041 | 0.105 | 0.000 | 0.000 | 0.072 | 0.091 |
| 2500 | AV | **0.300** | 0.216 | 0.138 | **0.296** | 0.218 | 0.140 | **0.077** | 0.000 | 0.000 | **0.010** | **0.165** |
| SD | 0.031 | 0.021 | 0.032 | 0.026 | 0.027 | 0.043 | 0.105 | 0.000 | 0.000 | 0.046 | 0.087 |
| 2700 | AV | **0.305** | 0.220 | 0.142 | **0.302** | 0.223 | 0.144 | **0.109** | 0.000 | 0.000 | **0.010** | **0.140** |
| SD | 0.033 | 0.029 | 0.036 | 0.027 | 0.023 | 0.038 | 0.092 | 0.000 | 0.000 | 0.042 | 0.081 |
| 2900 | AV | **0.307** | 0.222 | 0.134 | **0.304** | 0.225 | 0.142 | **0.122** | 0.002 | 0.000 | **0.014** | **0.170** |
| SD | 0.031 | 0.027 | 0.044 | 0.033 | 0.025 | 0.036 | 0.116 | 0.011 | 0.000 | 0.063 | 0.088 |
| 3100 | AV | **0.301** | 0.222 | 0.145 | **0.304** | 0.226 | 0.150 | **0.133** | 0.000 | 0.000 | **0.035** | **0.186** |
| SD | 0.030 | 0.028 | 0.039 | 0.026 | 0.028 | 0.034 | 0.109 | 0.000 | 0.000 | 0.084 | 0.090 |
| 3300 | AV | **0.306** | 0.222 | 0.139 | **0.300** | 0.223 | 0.141 | **0.150** | 0.002 | 0.000 | **0.012** | **0.167** |
| SD | 0.034 | 0.025 | 0.034 | 0.034 | 0.026 | 0.034 | 0.114 | 0.007 | 0.000 | 0.052 | 0.092 |
| 3500 | AV | **0.306** | 0.227 | 0.139 | **0.306** | 0.224 | 0.149 | **0.133** | 0.000 | 0.000 | **0.019** | **0.172** |
| SD | 0.033 | 0.026 | 0.034 | 0.036 | 0.027 | 0.037 | 0.119 | 0.000 | 0.000 | 0.067 | 0.075 |
| 3700 | AV | **0.305** | 0.215 | 0.136 | **0.305** | 0.224 | 0.144 | **0.137** | 0.000 | 0.000 | **0.036** | **0.162** |
| SD | 0.032 | 0.022 | 0.034 | 0.023 | 0.028 | 0.037 | 0.099 | 0.000 | 0.000 | 0.088 | 0.087 |
| 3900 | AV | **0.309** | 0.225 | 0.144 | **0.313** | 0.227 | 0.146 | **0.120** | 0.000 | 0.000 | **0.011** | **0.151** |
| SD | 0.029 | 0.027 | 0.039 | 0.031 | 0.027 | 0.029 | 0.108 | 0.000 | 0.000 | 0.050 | 0.091 |