

# 基本功能测试方案

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## 1 正常输入

测试程序加、减、乘、取余计算情况。

输入 1:  $129785 * 1263 + 21738 * 3124 + 231245 * 412 \% 135 * 123 + 112 - 12 + 156 * 89$

输出 1: 231849946

图 1: 四则运算

```
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-----

Please select a function:
1--Basic Function: calculate the expression.
2--Advanced Function: multiple two large numbers.
1
Basic Func Mode.
Please enter the expression:
129785 * 1263 + 21738 * 3124 + 231245 * 412 % 135 * 123 + 112 - 12 + 156 * 89
The result is:
231849946
Press any key to continue . . . _
```

输入 2:  $0 + 1 - 2 * 3 \% 4 + 5 - ..... + 497 - 498 * 499 \% 500$

输出 2: 30875

图 2: 较长数据测试

```
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-----

Please select a function:
1--Basic Function: calculate the expression.
2--Advanced Function: multiple two large numbers.
1
Basic Func Mode.
Please enter the expression:
0 + 1 - 2 * 3 % 4 + 5 - 6 * 7 % 8 + 9 - 10 * 11 % 12 + 13 - 14 * 15 % 16 + 17 - 18 * 19 % 20 + 21 - 22 * 23 %
24 + 25 - 26 * 27 % 28 + 29 - 30 * 31 % 32 + 33 - 34 * 35 % 36 + 37 - 38 * 39 % 40 + 41 - 42 * 43 % 44 + 45 -
46 * 47 % 48 + 49 - 50 * 51 % 52 + 53 - 54 * 55 % 56 + 57 - 58 * 59 % 60 + 61 - 62 * 63 % 64 + 65 - 66 * 67 %
68 + 69 - 70 * 71 % 72 + 73 - 74 * 75 % 76 + 77 - 78 * 79 % 80 + 81 - 82 * 83 % 84 + 85 - 86 * 87 % 88 + 89 -
90 * 91 % 92 + 93 - 94 * 95 % 96 + 97 - 98 * 99 % 100 + 101 - 102 * 103 % 104 + 105 - 106 * 107 % 108 + 109 -
110 * 111 % 112 + 113 - 114 * 115 % 116 + 117 - 118 * 119 % 120 + 121 - 122 * 123 % 124 + 125 - 126 * 127 % 12
8 + 129 - 130 * 131 % 132 + 133 - 134 * 135 % 136 + 137 - 138 * 139 % 140 + 141 - 142 * 143 % 144 + 145 - 146
* 147 % 148 + 149 - 150 * 151 % 152 + 153 - 154 * 155 % 156 + 157 - 158 * 159 % 160 + 161 - 162 * 163 % 164 +
165 - 166 * 167 % 168 + 169 - 170 * 171 % 172 + 173 - 174 * 175 % 176 + 177 - 178 * 179 % 180 + 181 - 182 * 18
3 % 184 + 185 - 186 * 187 % 188 + 189 - 190 * 191 % 192 + 193 - 194 * 195 % 196 + 197 - 198 * 199 % 200 + 201
- 202 * 203 % 204 + 205 - 206 * 207 % 208 + 209 - 210 * 211 % 212 + 213 - 214 * 215 % 216 + 217 - 218 * 219 %
220 + 221 - 222 * 223 % 224 + 225 - 226 * 227 % 228 + 229 - 230 * 231 % 232 + 233 - 234 * 235 % 236 + 237 - 23
8 * 239 % 240 + 241 - 242 * 243 % 244 + 245 - 246 * 247 % 248 + 249 - 250 * 251 % 252 + 253 - 254 * 255 % 256
+ 257 - 258 * 259 % 260 + 261 - 262 * 263 % 264 + 265 - 266 * 267 % 268 + 269 - 270 * 271 % 272 + 273 - 274 *
275 % 276 + 277 - 278 * 279 % 280 + 281 - 282 * 283 % 284 + 285 - 286 * 287 % 288 + 289 - 290 * 291 % 292 + 29
3 - 294 * 295 % 296 + 297 - 298 * 299 % 300 + 301 - 302 * 303 % 304 + 305 - 306 * 307 % 308 + 309 - 310 * 311
% 312 + 313 - 314 * 315 % 316 + 317 - 318 * 319 % 320 + 321 - 322 * 323 % 324 + 325 - 326 * 327 % 328 + 329 -
330 * 331 % 332 + 333 - 334 * 335 % 336 + 337 - 338 * 339 % 340 + 341 - 342 * 343 % 344 + 345 - 346 * 347 % 34
8 + 349 - 350 * 351 % 352 + 353 - 354 * 355 % 356 + 357 - 358 * 359 % 360 + 361 - 362 * 363 % 364 + 365 - 366
* 367 % 368 + 369 - 370 * 371 % 372 + 373 - 374 * 375 % 376 + 377 - 378 * 379 % 380 + 381 - 382 * 383 % 384 +
385 - 386 * 387 % 388 + 389 - 390 * 391 % 392 + 393 - 394 * 395 % 396 + 397 - 398 * 399 % 400 + 401 - 402 * 40
3 % 404 + 405 - 406 * 407 % 408 + 409 - 410 * 411 % 412 + 413 - 414 * 415 % 416 + 417 - 418 * 419 % 420 + 421
- 422 * 423 % 424 + 425 - 426 * 427 % 428 + 429 - 430 * 431 % 432 + 433 - 434 * 435 % 436 + 437 - 438 * 439 %
440 + 441 - 442 * 443 % 444 + 445 - 446 * 447 % 448 + 449 - 450 * 451 % 452 + 453 - 454 * 455 % 456 + 457 - 45
8 * 459 % 460 + 461 - 462 * 463 % 464 + 465 - 466 * 467 % 468 + 469 - 470 * 471 % 472 + 473 - 474 * 475 % 476
+ 477 - 478 * 479 % 480 + 481 - 482 * 483 % 484 + 485 - 486 * 487 % 488 + 489 - 490 * 491 % 492 + 493 - 494 *
495 % 496 + 497 - 498 * 499 % 500
The result is:
30875
Press any key to continue . . . _
```

## 2 鲁棒性测试

### 2.1 选择功能

输入 3: abcd

输出 3: Invalid function type!

图 3: 输入非数字

```
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-----  
Please select a function:  
1--Basic Function: calculate the expression.  
2--Advanced Function: multiple two large numbers.  
1  
Basic Func Mode.  
Please enter the expression:  
abcd  
Invalid operator!  
Press any key to continue . . . _
```

输入 4: 0

输出 4: Invalid function type!

图 4: 输入 1、2 之外的数

```
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-----  
Please select a function:  
1--Basic Function: calculate the expression.  
2--Advanced Function: multiple two large numbers.  
0  
Invalid function type!  
Press any key to continue . . . _
```

### 2.2 输入表达式

输入 5:

输出 5: Please enter the expression!

图 5: 不输入

```
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-----

Please select a function:
1--Basic Function: calculate the expression.
2--Advanced Function: multiple two large numbers.
1
Basic Func Mode.
Please enter the expression:

Please enter the expression!
Press any key to continue . . .
```

输入 6: \*15+1

输出 6: Operator missing operand!

图 6: 第一位不是数字

```
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-----

Please select a function:
1--Basic Function: calculate the expression.
2--Advanced Function: multiple two large numbers.
1
Basic Func Mode.
Please enter the expression:
*15+1
Operator missing operand!
Press any key to continue . . . ■
```

输入 7: 1 + (-2) \*3

输出 7: Please enter expressions in English!

图 7: 输入中文括号

```
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-----  
Please select a function:  
1--Basic Function: calculate the expression.  
2--Advanced Function: multiple two large numbers.  
1  
Basic Func Mode.  
Please enter the expression:  
1 + (-2) *3  
Please enter expressions in English!  
Press any key to continue . . . █
```

输入 8: abcd

输出 8: Invalid operator!

图 8: 输入不是数字

```
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-----  
Please select a function:  
1--Basic Function: calculate the expression.  
2--Advanced Function: multiple two large numbers.  
1  
Basic Func Mode.  
Please enter the expression:  
abcd  
Invalid operator!  
Press any key to continue . . . █
```

输入 9: 1 + 2 \* + 3

输出 9: Operator missing operand!

图 9: 缺少运算符/数字

```
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-----  
Please select a function:  
1--Basic Function: calculate the expression.  
2--Advanced Function: multiple two large numbers.  
1  
Basic Func Mode.  
Please enter the expression:  
1 + 2 * + 3  
Operator missing operand!  
Press any key to continue . . . _
```

输入 10:  $156 * ((-1) * 13$

输出 10: Parenthesis DO NOT match!

图 10: 括号不匹配

```
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-----  
Please select a function:  
1--Basic Function: calculate the expression.  
2--Advanced Function: multiple two large numbers.  
1  
Basic Func Mode.  
Please enter the expression:  
156 * ((-1) * 13  
Parenthesis DO NOT match!  
Press any key to continue . . . _
```

输入 11:  $12 \% (2-2)$

输出 11: Modulo 0!

图 11: 对 0 取余

```
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-----  
Please select a function:  
1--Basic Function: calculate the expression.  
2--Advanced Function: multiple two large numbers.  
1  
Basic Func Mode.  
Please enter the expression:  
12 % (2-2)  
Modulo 0!  
Press any key to continue . . . _
```

输入 12: 123+456\*

输出 12: Operator missing operand!

图 12: 最后一位是运算符

```
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-----  
Please select a function:  
1--Basic Function: calculate the expression.  
2--Advanced Function: multiple two large numbers.  
1  
Basic Func Mode.  
Please enter the expression:  
123+456*  
Operator missing operand!  
Press any key to continue . . . _
```

输入 13: 12345678901

输出 13: Number out of range!

图 13: 数字过长

```
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-----  
Please select a function:  
1--Basic Function: calculate the expression.  
2--Advanced Function: multiple two large numbers.  
1  
Basic Func Mode.  
Please enter the expression:  
12345678901  
Number out of range!  
Press any key to continue . . . _
```