

דוח מספר 2 חיפוש מקומי

תזכורת שינינו את הבעיה שתיהיה תואמת לבעיה שנתת לנו עם ה benchmark. ערך פונקציית המטרה ב Cmax הוא סכום המכונה הכי כבדה. בגלל שנאלצנו לשנות את הקוד לבעיה אחרת העדפנו להוסיף את מספר המכונות כדי שהיא תהיה זה לבעיה הנתונה לנו(זה שקול).

הרצנו את כל (130 קלטים) אשר הגרדת המשימות בהן היתה אחידה בטווח 1 עד 100 עם גודל מכונות 5 עד 25 ומספר משימות בין 10 ל 1000, זמן עבודה של קלט בגודל 500 משימות עם 25 מכונות הינו כ 1000 שניות, לכן בחרנו בסדר הגודל הזה, כדי לסיים בזמן סביר(הקלט עדיין רץ תוך כדי הכנת הדוח).

נתאר את פורמט המסמך:

דוגמה i תחומה בין Start ל End.

נוסיף הערות בשחור על הדוגמא הראשונה כדי שתוכלי להבין את מבנה הפלט שלנו.

בסוף המסמך יהיו שלוש שורות סיכום, נחסוך לך ונוסיף אותן פה לניתוח:

סה"כ: 10 קלטים של 10 משימות, 30 של 50 משימות, 30 של 100 משימות, 30 של 500 משימות, 30 של 1000 משימות.

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 30))

שורה זו אומרת: בקלט עם 10 משימות צדקנו ב9, בקלט עם 50 משימות צדקנו ב20, בקלט עם 100 משימות צדקנו ב24, בקלט עם 500 משימות צדקנו ב30 (כולם), בקלט עם 1000 משימות צדקנו ב30 (כולם).

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

טעינו ב 1 בגודל 10 משימות, 10 בגודל 50 משימות, 6 בגודל 100 משימות.

"Total Avegare error: 0.207692"

טעות שגיאה ממוצעת היא נמוכה מאוד.

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"number of input=130. distribution=U. range=[1, 100] #jobs=all. #machines=all"

"-----START 1 from 130-----"
"input file number 1: inputName=C:/algo/h/docs/benchMark/all/U_1_0010_05_0.txt and // Task full path
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_0010_0.txt"
"***Data from file U_1_0010_05_0.txt: machinesNum=5 jobsNum=10" // Task details
"***SOLUTION Data from file SOL_U_1_05_0010_0.txt: machinesNum=5 jobsNum=10 lowerBound=101
upperBound=101 isOptimal=1"
Content of machines summed (92, 87, 94, 96, 101) // solution file details
input selected: size 10 sum 470 // input details

----Our Results-----
best from Our local search found:
target function = 106, num of machines=5 //Our results
"\n----Comparison for the 0 example----"
"***tf from benchmark was 106(we added the number of machines) and target function from our local search is 106" //
Target function comperison
***RESULT IS THE SAME // check if TF is the same, if not displays the difference
Run time: 0.016 seconds // Tasks run time
"Correct (size-numberCorrect):" QMap((10, 1)) // Current correct tasks solved. Map form jobs amount to correct solutions.
"Mistakes(size-numberMistakes):" QMap() // Current incorrect tasks solved. Map form jobs amount to incorrect solutions.
"Avegare error: nan" //We have a variable that accumulates the value of the mistakes (once there will be a mistake we will
get the proportional error)
"-----END 1 from 130-----"

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"-----START 2 from 130-----"

"input file number 2: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0010\_05\_1.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0010\_1.txt"

\*\*\*Data from file U\_1\_0010\_05\_1.txt: machinesNum=5 jobsNum=10"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0010\_1.txt: machinesNum=5 jobsNum=10 lowerBound=86 upperBound=86 isOptimal=1"

Content of machines summed (86, 78, 76, 75, 77)

input selected: size 10 sum 392

----Our Results-----

best from Our local search found:

target function = 91, num of machines=5

"\n----Comparison for the 1 example----

\*\*\*tf from benchmark was 91(we added the number of machines) and target function from our local search is 91"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 2))

"Mistakes(size-numberMistakes):" QMap()

"Avegare error: 0"

"-----END 2 from 130-----"

"-----START 3 from 130-----"

"input file number 3: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0010\_05\_2.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0010\_2.txt"

\*\*\*Data from file U\_1\_0010\_05\_2.txt: machinesNum=5 jobsNum=10"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0010\_2.txt: machinesNum=5 jobsNum=10 lowerBound=116 upperBound=116 isOptimal=1"

Content of machines summed (111, 101, 116, 106, 116)

input selected: size 10 sum 550

----Our Results-----

best from Our local search found:

target function = 121, num of machines=5

"\n----Comparison for the 2 example----"

\*\*\*\*tf from benchmark was 121(we added the number of machines) and target function from our local search is 121"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 3))

"Mistakes(size-numberMistakes):" QMap()

"Avegare error: 0"

"-----END 3 from 130-----"

"-----START 4 from 130-----"

"input file number 4: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0010\_05\_3.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0010\_3.txt"

\*\*\*Data from file U\_1\_0010\_05\_3.txt: machinesNum=5 jobsNum=10"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0010\_3.txt: machinesNum=5 jobsNum=10 lowerBound=125 upperBound=125 isOptimal=1"

Content of machines summed (100, 125, 120, 112, 120)

input selected: size 10 sum 577

----Our Results-----

best from Our local search found:

target function = 130, num of machines=5

"\n----Comparison for the 3 example----"

\*\*\*\*tf from benchmark was 130(we added the number of machines) and target function from our local search is 130"

\*\*\*RESULT IS THE SAME

Run time: 0.015 seconds

"Correct (size-numberCorrect):" QMap((10, 4))

"Mistakes(size-numberMistakes):" QMap()

"Avegare error: 0"

"-----END 4 from 130-----"

"-----START 5 from 130-----"

"input file number 5: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0010\_05\_4.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0010\_4.txt"

\*\*\*Data from file U\_1\_0010\_05\_4.txt: machinesNum=5 jobsNum=10"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0010\_4.txt: machinesNum=5 jobsNum=10 lowerBound=89 upperBound=89 isOptimal=1 "  
Content of machines summed (69, 76, 68, 80, 89)  
input selected: size 10 sum 382

----Our Results-----

best from Our local search found:

target function = 94, num of machines=5

"\n----Comparison for the 4 example----

\*\*\*\*tf from benchmark was 94(we added the number of machines) and target function from our local search is 94"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 5))

"Mistakes(size-numberMistakes):" QMap()

"Avegare error: 0"

"-----END 5 from 130-----"

"-----START 6 from 130-----"

"input file number 6: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0010\_05\_5.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0010\_5.txt"

\*\*\*\*Data from file U\_1\_0010\_05\_5.txt: machinesNum=5 jobsNum=10"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0010\_5.txt: machinesNum=5 jobsNum=10 lowerBound=121 upperBound=121 isOptimal=1 "

Content of machines summed (95, 95, 109, 109, 121)

input selected: size 10 sum 529

----Our Results-----

best from Our local search found:

target function = 126, num of machines=5

"\n----Comparison for the 5 example----

\*\*\*\*tf from benchmark was 126(we added the number of machines) and target function from our local search is 126"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 6))

"Mistakes(size-numberMistakes):" QMap()

"Avegare error: 0"  
"-----END 6 from 130-----"  
"-----START 7 from 130-----"  
"input file number 7: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0010\_05\_6.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0010\_6.txt"  
"\*\*\*Data from file U\_1\_0010\_05\_6.txt: machinesNum=5 jobsNum=10"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0010\_6.txt: machinesNum=5 jobsNum=10 lowerBound=113 upperBound=113 isOptimal=1"  
Content of machines summed (113, 113, 108, 92, 83)  
input selected: size 10 sum 509

----Our Results-----

best from Our local search found:

target function = 122, num of machines=5

"\n----Comparison for the 6 example----

\*\*\*tf from benchmark was 118(we added the number of machines) and target function from our local search is 122"

\*\*\*Different 4

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 6))

"Mistakes(size-numberMistakes):" QMap((10, 1))

"Avegare error: 0.666667"

"-----END 7 from 130-----"

"-----START 8 from 130-----"

"input file number 8: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0010\_05\_7.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0010\_7.txt"

\*\*\*Data from file U\_1\_0010\_05\_7.txt: machinesNum=5 jobsNum=10"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0010\_7.txt: machinesNum=5 jobsNum=10 lowerBound=99 upperBound=99 isOptimal=1"

Content of machines summed (99, 90, 88, 93, 93)

input selected: size 10 sum 463

----Our Results-----

best from Our local search found:

target function = 104, num of machines=5

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"\n----Comparison for the 7 example----"
"***tf from benchmark was 104(we added the number of machines) and target function from our local search is 104"
***RESULT IS THE SAME
Run time: 0.016 seconds
"Correct (size-numberCorrect):" QMap((10, 7))
"Mistakes(size-numberMistakes):" QMap((10, 1))
"Avegare error: 0.571429"
"-----END 8 from 130-----"
"-----START 9 from 130-----"
"input file number 9: inputName=C:/algo/h/docs/benchMark/all/U_1_0010_05_8.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_0010_8.txt"
"***Data from file U_1_0010_05_8.txt: machinesNum=5 jobsNum=10"
"***SOLUTION Data from file SOL_U_1_05_0010_8.txt: machinesNum=5 jobsNum=10 lowerBound=116 upperBound=116 isOptimal=1"
Content of machines summed (100, 106, 102, 112, 116)
input selected: size 10 sum 536

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----Our Results-----

best from Our local search found:

target function = 121, num of machines=5

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"\n----Comparison for the 8 example----"

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"***tf from benchmark was 121(we added the number of machines) and target function from our local search is 121"

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***RESULT IS THE SAME

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Run time: 0 seconds

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"Correct (size-numberCorrect):" QMap((10, 8))

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"Mistakes(size-numberMistakes):" QMap((10, 1))

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"Avegare error: 0.5"

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"-----END 9 from 130-----"

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"-----START 10 from 130-----"

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"input file number 10: inputName=C:/algo/h/docs/benchMark/all/U_1_0010_05_9.txt and

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solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_0010_9.txt"

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"***Data from file U_1_0010_05_9.txt: machinesNum=5 jobsNum=10"

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"***SOLUTION Data from file SOL_U_1_05_0010_9.txt: machinesNum=5 jobsNum=10 lowerBound=104 upperBound=104 isOptimal=1"

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Content of machines summed (85, 97, 104, 94, 86)  
input selected: size 10 sum 466

----Our Results-----

best from Our local search found:

target function = 109, num of machines=5

"\n----Comparison for the 9 example----

\*\*\*\*tf from benchmark was 109(we added the number of machines) and target function from our local search is 109"

\*\*\*RESULT IS THE SAME

Run time: 0.015 seconds

"Correct (size-numberCorrect):" QMap((10, 9))

"Mistakes(size-numberMistakes):" QMap((10, 1))

"Avegare error: 0.444444"

"-----END 10 from 130-----"

"-----START 11 from 130-----"

"input file number 11: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_05\_0.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0050\_0.txt"

\*\*\*\*Data from file U\_1\_0050\_05\_0.txt: machinesNum=5 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0050\_0.txt: machinesNum=5 jobsNum=50 lowerBound=515 upperBound=515 isOptimal=1"

Content of machines summed (515, 515, 515, 515, 512)

input selected: size 50 sum 2572

----Our Results-----

best from Our local search found:

target function = 520, num of machines=5

"\n----Comparison for the 10 example----

\*\*\*\*tf from benchmark was 520(we added the number of machines) and target function from our local search is 520"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 1))

"Mistakes(size-numberMistakes):" QMap((10, 1))

"Avegare error: 0.4"



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"-----END 11 from 130-----"
"-----START 12 from 130-----"
"input file number 12: inputName=C:/algo/h/docs/benchMark/all/U_1_0050_05_1.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_0050_1.txt"
"***Data from file U_1_0050_05_1.txt: machinesNum=5 jobsNum=50"
"***SOLUTION Data from file SOL_U_1_05_0050_1.txt: machinesNum=5 jobsNum=50 lowerBound=560 upperBound=560 isOptimal=1"
Content of machines summed (560, 560, 559, 560, 559)
input selected: size 50 sum 2798
```

----Our Results-----

best from Our local search found:

target function = 565, num of machines=5

"\n----Comparison for the 11 example----

\*\*\*tf from benchmark was 565(we added the number of machines) and target function from our local search is 565"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 2))

"Mistakes(size-numberMistakes):" QMap((10, 1))

"Avegare error: 0.363636"

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"-----END 12 from 130-----"
"-----START 13 from 130-----"
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"input file number 13: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_05\_2.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0050\_2.txt"

\*\*\*Data from file U\_1\_0050\_05\_2.txt: machinesNum=5 jobsNum=50"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0050\_2.txt: machinesNum=5 jobsNum=50 lowerBound=452 upperBound=452 isOptimal=1"

Content of machines summed (452, 452, 452, 452, 450)

input selected: size 50 sum 2258

----Our Results-----

best from Our local search found:

target function = 457, num of machines=5

"\n----Comparison for the 12 example----

\*\*\*\*tf from benchmark was 457(we added the number of machines) and target function from our local search is 457"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 3))

"Mistakes(size-numberMistakes):" QMap((10, 1))

"Avegare error: 0.333333"

"-----END 13 from 130-----"

"-----START 14 from 130-----"

"input file number 14: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_05\_3.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0050\_3.txt"

\*\*\*\*Data from file U\_1\_0050\_05\_3.txt: machinesNum=5 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0050\_3.txt: machinesNum=5 jobsNum=50 lowerBound=572 upperBound=572 isOptimal=1"

Content of machines summed (572, 572, 572, 572, 570)

input selected: size 50 sum 2858

----Our Results-----

best from Our local search found:

target function = 577, num of machines=5

"\n----Comparison for the 13 example----

\*\*\*\*tf from benchmark was 577(we added the number of machines) and target function from our local search is 577"

\*\*\*RESULT IS THE SAME

Run time: 0.172 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 4))

"Mistakes(size-numberMistakes):" QMap((10, 1))

"Avegare error: 0.307692"

"-----END 14 from 130-----"

"-----START 15 from 130-----"

"input file number 15: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_05\_4.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0050\_4.txt"

\*\*\*\*Data from file U\_1\_0050\_05\_4.txt: machinesNum=5 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0050\_4.txt: machinesNum=5 jobsNum=50 lowerBound=540 upperBound=540 isOptimal=1"

Content of machines summed (540, 540, 540, 540, 538)

input selected: size 50 sum 2698

----Our Results-----

best from Our local search found:

target function = 545, num of machines=5

"\n----Comparison for the 14 example----

\*\*\*\*tf from benchmark was 545(we added the number of machines) and target function from our local search is 545"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 5))

"Mistakes(size-numberMistakes):" QMap((10, 1))

"Avegare error: 0.285714"

"-----END 15 from 130-----"

"-----START 16 from 130-----"

"input file number 16: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_05\_5.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0050\_5.txt"

\*\*\*\*Data from file U\_1\_0050\_05\_5.txt: machinesNum=5 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0050\_5.txt: machinesNum=5 jobsNum=50 lowerBound=497 upperBound=497 isOptimal=1"

Content of machines summed (497, 497, 497, 497, 495)

input selected: size 50 sum 2483

----Our Results-----

best from Our local search found:

target function = 502, num of machines=5

"\n----Comparison for the 15 example----

\*\*\*\*tf from benchmark was 502(we added the number of machines) and target function from our local search is 502"

\*\*\*RESULT IS THE SAME

Run time: 0.156 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 6))

"Mistakes(size-numberMistakes):" QMap((10, 1))

"Avegare error: 0.266667"

"-----END 16 from 130-----"

"-----START 17 from 130-----"  
"input file number 17: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_05\_6.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0050\_6.txt"  
"\*\*\*Data from file U\_1\_0050\_05\_6.txt: machinesNum=5 jobsNum=50"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0050\_6.txt: machinesNum=5 jobsNum=50 lowerBound=541 upperBound=541 isOptimal=1"  
Content of machines summed (541, 541, 541, 541, 540)  
input selected: size 50 sum 2704

----Our Results-----

best from Our local search found:

target function = 546, num of machines=5

"\n----Comparison for the 16 example----

\*\*\*tf from benchmark was 546(we added the number of machines) and target function from our local search is 546"

\*\*\*RESULT IS THE SAME

Run time: 0.235 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 7))

"Mistakes(size-numberMistakes):" QMap((10, 1))

"Avegare error: 0.25"

"-----END 17 from 130-----"

"-----START 18 from 130-----"

"input file number 18: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_05\_7.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0050\_7.txt"

\*\*\*Data from file U\_1\_0050\_05\_7.txt: machinesNum=5 jobsNum=50"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0050\_7.txt: machinesNum=5 jobsNum=50 lowerBound=536 upperBound=536 isOptimal=1"

Content of machines summed (536, 536, 536, 536, 533)

input selected: size 50 sum 2677

----Our Results-----

best from Our local search found:

target function = 542, num of machines=5

"\n----Comparison for the 17 example----

\*\*\*tf from benchmark was 541(we added the number of machines) and target function from our local search is 542"

\*\*\*Different 1

Run time: 0.219 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 7))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 1))

"Avegare error: 0.294118"

"-----END 18 from 130-----"

"-----START 19 from 130-----"

"input file number 19: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_05\_8.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0050\_8.txt"

\*\*\*Data from file U\_1\_0050\_05\_8.txt: machinesNum=5 jobsNum=50"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0050\_8.txt: machinesNum=5 jobsNum=50 lowerBound=471 upperBound=471 isOptimal=1"

Content of machines summed (471, 471, 471, 471, 471)

input selected: size 50 sum 2355

----Our Results-----

best from Our local search found:

target function = 476, num of machines=5

"\n----Comparison for the 18 example----"

\*\*\*tf from benchmark was 476(we added the number of machines) and target function from our local search is 476"

\*\*\*RESULT IS THE SAME

Run time: 0.093 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 8))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 1))

"Avegare error: 0.277778"

"-----END 19 from 130-----"

"-----START 20 from 130-----"

"input file number 20: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_05\_9.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0050\_9.txt"

\*\*\*Data from file U\_1\_0050\_05\_9.txt: machinesNum=5 jobsNum=50"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0050\_9.txt: machinesNum=5 jobsNum=50 lowerBound=498 upperBound=498 isOptimal=1"

Content of machines summed (498, 498, 498, 498, 497)

input selected: size 50 sum 2489

----Our Results-----

best from Our local search found:

target function = 503, num of machines=5

"\n----Comparison for the 19 example----

\*\*\*\*tf from benchmark was 503(we added the number of machines) and target function from our local search is 503"

\*\*\*RESULT IS THE SAME

Run time: 0.172 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 9))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 1))

"Avegare error: 0.263158"

"-----END 20 from 130-----"

"-----START 21 from 130-----"

"input file number 21: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_10\_0.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0050\_0.txt"

\*\*\*\*Data from file U\_1\_0050\_10\_0.txt: machinesNum=10 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0050\_0.txt: machinesNum=10 jobsNum=50 lowerBound=242 upperBound=242 isOptimal=1"

Content of machines summed (242, 242, 242, 242, 242, 242, 242, 242, 242, 239)

input selected: size 50 sum 2417

----Our Results-----

best from Our local search found:

target function = 254, num of machines=10

"\n----Comparison for the 20 example----

\*\*\*\*tf from benchmark was 252(we added the number of machines) and target function from our local search is 254"

\*\*\*Different 2

Run time: 1.032 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 9))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 2))

"Avegare error: 0.35"

"-----END 21 from 130-----"

"-----START 22 from 130-----"

"input file number 22: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_10\_1.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0050\_1.txt"  
"\*\*\*Data from file U\_1\_0050\_10\_1.txt: machinesNum=10 jobsNum=50"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0050\_1.txt: machinesNum=10 jobsNum=50 lowerBound=227 upperBound=227 isOptimal=1 "  
Content of machines summed (227, 227, 227, 227, 227, 227, 227, 227, 227, 223)  
input selected: size 50 sum 2266

----Our Results-----

best from Our local search found:

target function = 237, num of machines=10

"\n----Comparison for the 21 example----

"\*\*\*tf from benchmark was 237(we added the number of machines) and target function from our local search is 237"

\*\*\*RESULT IS THE SAME

Run time: 0.593 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 10))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 2))

"Avegare error: 0.333333"

"-----END 22 from 130-----"

"-----START 23 from 130-----"

"input file number 23: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_10\_2.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0050\_2.txt"

"\*\*\*Data from file U\_1\_0050\_10\_2.txt: machinesNum=10 jobsNum=50"

"\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0050\_2.txt: machinesNum=10 jobsNum=50 lowerBound=209 upperBound=209 isOptimal=1 "

Content of machines summed (209, 209, 209, 209, 209, 209, 209, 209, 209, 209)

input selected: size 50 sum 2090

----Our Results-----

best from Our local search found:

target function = 220, num of machines=10

"\n----Comparison for the 22 example----

"\*\*\*tf from benchmark was 219(we added the number of machines) and target function from our local search is 220"

\*\*\*Different 1

Run time: 0.969 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 10))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 3))

"Avegare error: 0.363636"

"-----END 23 from 130-----"

"-----START 24 from 130-----"

"input file number 24: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_10\_3.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0050\_3.txt"

\*\*\*\*Data from file U\_1\_0050\_10\_3.txt: machinesNum=10 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0050\_3.txt: machinesNum=10 jobsNum=50 lowerBound=272 upperBound=272 isOptimal=1"

Content of machines summed (272, 272, 272, 272, 272, 272, 272, 272, 272, 271)

input selected: size 50 sum 2719

----Our Results-----

best from Our local search found:

target function = 283, num of machines=10

"\n----Comparison for the 23 example----"

\*\*\*\*tf from benchmark was 282(we added the number of machines) and target function from our local search is 283"

\*\*\*Different 1

Run time: 0.985 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 10))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 4))

"Avegare error: 0.391304"

"-----END 24 from 130-----"

"-----START 25 from 130-----"

"input file number 25: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_10\_4.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0050\_4.txt"

\*\*\*\*Data from file U\_1\_0050\_10\_4.txt: machinesNum=10 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0050\_4.txt: machinesNum=10 jobsNum=50 lowerBound=252 upperBound=252 isOptimal=1"

Content of machines summed (252, 252, 252, 252, 252, 252, 252, 252, 252, 245)

input selected: size 50 sum 2513



----Our Results-----

best from Our local search found:

target function = 262, num of machines=10

"\n----Comparison for the 24 example----

\*\*\*\*tf from benchmark was 262(we added the number of machines) and target function from our local search is 262"

\*\*\*RESULT IS THE SAME

Run time: 0.969 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 11))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 4))

"Avegare error: 0.375"

"-----END 25 from 130-----"

"-----START 26 from 130-----"

"input file number 26: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_10\_5.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0050\_5.txt"

\*\*\*\*Data from file U\_1\_0050\_10\_5.txt: machinesNum=10 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0050\_5.txt: machinesNum=10 jobsNum=50 lowerBound=277 upperBound=277 isOptimal=1"

Content of machines summed (277, 277, 277, 277, 277, 277, 277, 277, 277, 274)

input selected: size 50 sum 2767

----Our Results-----

best from Our local search found:

target function = 288, num of machines=10

"\n----Comparison for the 25 example----

\*\*\*\*tf from benchmark was 287(we added the number of machines) and target function from our local search is 288"

\*\*\*Different 1

Run time: 0.953 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 11))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 5))

"Avegare error: 0.4"

"-----END 26 from 130-----"

"-----START 27 from 130-----"

"input file number 27: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_10\_6.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0050\_6.txt"  
"\*\*\*Data from file U\_1\_0050\_10\_6.txt: machinesNum=10 jobsNum=50"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0050\_6.txt: machinesNum=10 jobsNum=50 lowerBound=257 upperBound=257 isOptimal=1 "  
Content of machines summed (257, 257, 257, 257, 257, 257, 257, 257, 252)  
input selected: size 50 sum 2565

----Our Results-----

best from Our local search found:

target function = 267, num of machines=10

"\n----Comparison for the 26 example----

"\*\*\*tf from benchmark was 267(we added the number of machines) and target function from our local search is 267"

\*\*\*RESULT IS THE SAME

Run time: 0.594 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 12))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 5))

"Avegare error: 0.384615"

"-----END 27 from 130-----"

"-----START 28 from 130-----"

"input file number 28: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_10\_7.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0050\_7.txt"

"\*\*\*Data from file U\_1\_0050\_10\_7.txt: machinesNum=10 jobsNum=50"

"\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0050\_7.txt: machinesNum=10 jobsNum=50 lowerBound=230 upperBound=230 isOptimal=1 "

Content of machines summed (230, 230, 230, 230, 230, 230, 230, 230, 225)

input selected: size 50 sum 2295

----Our Results-----

best from Our local search found:

target function = 240, num of machines=10

"\n----Comparison for the 27 example----

"\*\*\*tf from benchmark was 240(we added the number of machines) and target function from our local search is 240"

\*\*\*RESULT IS THE SAME

Run time: 0.531 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 13))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 5))

"Avegare error: 0.37037"

"-----END 28 from 130-----"

"-----START 29 from 130-----"

"input file number 29: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_10\_8.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0050\_8.txt"

\*\*\*\*Data from file U\_1\_0050\_10\_8.txt: machinesNum=10 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0050\_8.txt: machinesNum=10 jobsNum=50 lowerBound=235 upperBound=235 isOptimal=1"

Content of machines summed (235, 235, 235, 235, 235, 235, 235, 235, 235, 231)

input selected: size 50 sum 2346

----Our Results-----

best from Our local search found:

target function = 246, num of machines=10

"\n----Comparison for the 28 example----"

\*\*\*\*tf from benchmark was 245(we added the number of machines) and target function from our local search is 246"

\*\*\*Different 1

Run time: 0.991 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 13))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 6))

"Avegare error: 0.392857"

"-----END 29 from 130-----"

"-----START 30 from 130-----"

"input file number 30: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_10\_9.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0050\_9.txt"

\*\*\*\*Data from file U\_1\_0050\_10\_9.txt: machinesNum=10 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0050\_9.txt: machinesNum=10 jobsNum=50 lowerBound=235 upperBound=235 isOptimal=1"

Content of machines summed (235, 235, 235, 235, 235, 235, 235, 235, 235, 233)

input selected: size 50 sum 2348

----Our Results-----

best from Our local search found:

target function = 246, num of machines=10

"\n----Comparison for the 29 example----

\*\*\*\*tf from benchmark was 245(we added the number of machines) and target function from our local search is 246"

\*\*\*Different 1

Run time: 1.072 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 13))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 7))

"Avegare error: 0.413793"

"-----END 30 from 130-----"

"-----START 31 from 130-----"

"input file number 31: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_25\_0.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0050\_0.txt"

\*\*\*\*Data from file U\_1\_0050\_25\_0.txt: machinesNum=25 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0050\_0.txt: machinesNum=25 jobsNum=50 lowerBound=115 upperBound=115 isOptimal=1"

Content of machines summed (98, 98, 97, 100, 98, 99, 97, 97, 100, 100, 101, 101, 100, 104, 102, 106, 109, 108, 110, 110, 109, 111, 108, 115,  
111)

input selected: size 50 sum 2589

----Our Results-----

best from Our local search found:

target function = 140, num of machines=25

"\n----Comparison for the 30 example----

\*\*\*\*tf from benchmark was 140(we added the number of machines) and target function from our local search is 140"

\*\*\*RESULT IS THE SAME

Run time: 16.049 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 14))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 7))

"Avegare error: 0.4"

"-----END 31 from 130-----"

"-----START 32 from 130-----"

"input file number 32: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_25\_1.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0050\_1.txt"  
"\*\*\*\*Data from file U\_1\_0050\_25\_1.txt: machinesNum=25 jobsNum=50"  
"\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0050\_1.txt: machinesNum=25 jobsNum=50 lowerBound=102 upperBound=102 isOptimal=1"  
Content of machines summed (97, 100, 98, 100, 100, 100, 97, 98, 98, 98, 100, 99, 99, 98, 96, 97, 96, 99, 102, 102, 101, 102, 97, 99, 98)  
input selected: size 50 sum 2471

----Our Results-----

best from Our local search found:

target function = 127, num of machines=25

"\n----Comparison for the 31 example----

"\*\*\*\*tf from benchmark was 127(we added the number of machines) and target function from our local search is 127"

\*\*\*RESULT IS THE SAME

Run time: 14.523 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 15))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 7))

"Avegare error: 0.387097"

"-----END 32 from 130-----"

"-----START 33 from 130-----"

"input file number 33: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_25\_2.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0050\_2.txt"

"\*\*\*\*Data from file U\_1\_0050\_25\_2.txt: machinesNum=25 jobsNum=50"

"\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0050\_2.txt: machinesNum=25 jobsNum=50 lowerBound=111 upperBound=111 isOptimal=1"

Content of machines summed (96, 95, 95, 97, 96, 97, 97, 96, 97, 95, 98, 100, 95, 101, 100, 110, 103, 111, 108, 104, 103, 103, 104, 105, 106)

input selected: size 50 sum 2512

----Our Results-----

best from Our local search found:

target function = 136, num of machines=25

"\n----Comparison for the 32 example----

"\*\*\*\*tf from benchmark was 136(we added the number of machines) and target function from our local search is 136"

\*\*\*RESULT IS THE SAME

Run time: 17.502 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 16))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 7))

"Avegare error: 0.375"

"-----END 33 from 130-----"

"-----START 34 from 130-----"

"input file number 34: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_25\_3.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0050\_3.txt"

\*\*\*\*Data from file U\_1\_0050\_25\_3.txt: machinesNum=25 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0050\_3.txt: machinesNum=25 jobsNum=50 lowerBound=111 upperBound=111 isOptimal=1"

Content of machines summed (109, 108, 110, 100, 92, 110, 110, 90, 90, 108, 108, 110, 110, 110, 110, 107, 103, 107, 110, 109, 107, 108, 110, 111)

input selected: size 50 sum 2657

----Our Results-----

best from Our local search found:

target function = 139, num of machines=25

"\n----Comparison for the 33 example----

\*\*\*\*tf from benchmark was 136(we added the number of machines) and target function from our local search is 139"

\*\*\*Different 3

Run time: 13.871 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 16))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 8))

"Avegare error: 0.454545"

"-----END 34 from 130-----"

"-----START 35 from 130-----"

"input file number 35: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_25\_4.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0050\_4.txt"

\*\*\*\*Data from file U\_1\_0050\_25\_4.txt: machinesNum=25 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0050\_4.txt: machinesNum=25 jobsNum=50 lowerBound=111 upperBound=111 isOptimal=1"

Content of machines summed (111, 111, 104, 91, 91, 91, 111, 111, 85, 85, 111, 111, 111, 107, 111, 109, 109, 109, 111, 110, 110, 111, 111, 107, 105)

input selected: size 50 sum 2634

----Our Results-----

best from Our local search found:

target function = 138, num of machines=25

"\n----Comparison for the 34 example----

\*\*\*\*tf from benchmark was 136(we added the number of machines) and target function from our local search is 138"

\*\*\*Different 2

Run time: 14.752 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 16))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 9))

"Avegare error: 0.5"

"-----END 35 from 130-----"

"-----START 36 from 130-----"

"input file number 36: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_25\_5.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0050\_5.txt"

\*\*\*\*Data from file U\_1\_0050\_25\_5.txt: machinesNum=25 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0050\_5.txt: machinesNum=25 jobsNum=50 lowerBound=121 upperBound=121 isOptimal=1"

Content of machines summed (100, 103, 106, 104, 106, 109, 108, 111, 111, 107, 110, 110, 109, 110, 111, 113, 112, 113, 112, 121, 114, 119, 119, 119, 118)

input selected: size 50 sum 2775

----Our Results-----

best from Our local search found:

target function = 146, num of machines=25

"\n----Comparison for the 35 example----

\*\*\*\*tf from benchmark was 146(we added the number of machines) and target function from our local search is 146"

\*\*\*RESULT IS THE SAME

Run time: 15.878 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 17))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 9))

"Avegare error: 0.485714"

```
"-----END 36 from 130-----"
"-----START 37 from 130-----"
"input file number 37: inputName=C:/algo/h/docs/benchMark/all/U_1_0050_25_6.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_0050_6.txt"
"***Data from file U_1_0050_25_6.txt: machinesNum=25 jobsNum=50"
"***SOLUTION Data from file SOL_U_1_25_0050_6.txt: machinesNum=25 jobsNum=50 lowerBound=99 upperBound=99 isOptimal=1"
Content of machines summed (99, 99, 99, 99, 99, 99, 99, 99, 99, 99, 99, 99, 99, 99, 99, 98, 97, 97, 96, 95, 95, 94, 93, 74, 72)
input selected: size 50 sum 2396
```

----Our Results-----

best from Our local search found:

target function = 124, num of machines=25

"\n----Comparison for the 36 example----

\*\*\*tf from benchmark was 124(we added the number of machines) and target function from our local search is 124"

\*\*\*RESULT IS THE SAME

Run time: 12.986 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 18))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 9))

"Avegare error: 0.472222"

```
"-----END 37 from 130-----"
"-----START 38 from 130-----"
```

```
"input file number 38: inputName=C:/algo/h/docs/benchMark/all/U_1_0050_25_7.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_0050_7.txt"
```

```
"***Data from file U_1_0050_25_7.txt: machinesNum=25 jobsNum=50"
```

```
"***SOLUTION Data from file SOL_U_1_25_0050_7.txt: machinesNum=25 jobsNum=50 lowerBound=98 upperBound=98 isOptimal=1"
```

Content of machines summed (98, 87, 89, 92, 91, 93, 95, 94, 92, 91, 91, 88, 87, 86, 87, 87, 87, 85, 86, 88, 85, 88, 88, 87, 91)

input selected: size 50 sum 2233

----Our Results-----

best from Our local search found:

target function = 122, num of machines=24

"\n----Comparison for the 37 example----



\*\*\*\*tf from benchmark was 123(we added the number of machines) and target function from our local search is 122"

\*\*\*Different -1

Run time: 14.908 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 18))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))

"Avegare error: 0.432432"

"-----END 38 from 130-----"

"-----START 39 from 130-----"

"input file number 39: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_25\_8.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0050\_8.txt"

\*\*\*\*Data from file U\_1\_0050\_25\_8.txt: machinesNum=25 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0050\_8.txt: machinesNum=25 jobsNum=50 lowerBound=97 upperBound=97 isOptimal=1"

Content of machines summed (97, 97, 97, 94, 90, 89, 96, 97, 97, 97, 97, 97, 90, 95, 94, 91, 97, 97, 97, 82, 96, 96, 97, 95, 97)

input selected: size 50 sum 2369

----Our Results-----

best from Our local search found:

target function = 122, num of machines=25

"\n----Comparison for the 38 example----

\*\*\*\*tf from benchmark was 122(we added the number of machines) and target function from our local search is 122"

\*\*\*RESULT IS THE SAME

Run time: 12.736 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 19))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))

"Avegare error: 0.421053"

"-----END 39 from 130-----"

"-----START 40 from 130-----"

"input file number 40: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0050\_25\_9.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0050\_9.txt"

\*\*\*\*Data from file U\_1\_0050\_25\_9.txt: machinesNum=25 jobsNum=50"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0050\_9.txt: machinesNum=25 jobsNum=50 lowerBound=115 upperBound=115 isOptimal=1"

Content of machines summed (103, 100, 104, 103, 101, 101, 102, 102, 105, 108, 106, 114, 115, 114, 111, 110, 114, 110, 110, 114, 113, 115, 114, 109, 107)

input selected: size 50 sum 2705

----Our Results-----

best from Our local search found:

target function = 140, num of machines=25

"\n----Comparison for the 39 example----"

\*\*\*\*tf from benchmark was 140(we added the number of machines) and target function from our local search is 140"

\*\*\*RESULT IS THE SAME

Run time: 15.919 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))

"Avegare error: 0.410256"

"-----END 40 from 130-----"

"-----START 41 from 130-----"

"input file number 41: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_05\_0.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0100\_0.txt"

\*\*\*Data from file U\_1\_0100\_05\_0.txt: machinesNum=5 jobsNum=100"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0100\_0.txt: machinesNum=5 jobsNum=100 lowerBound=922 upperBound=922 isOptimal=1"

Content of machines summed (922, 921, 921, 921, 921)

input selected: size 100 sum 4606

----Our Results-----

best from Our local search found:

target function = 927, num of machines=5

"\n----Comparison for the 40 example----"

\*\*\*\*tf from benchmark was 927(we added the number of machines) and target function from our local search is 927"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 1))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))

"Avegare error: 0.4"  
"-----END 41 from 130-----"  
"-----START 42 from 130-----"  
"input file number 42: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_05\_1.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0100\_1.txt"  
"\*\*\*Data from file U\_1\_0100\_05\_1.txt: machinesNum=5 jobsNum=100"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0100\_1.txt: machinesNum=5 jobsNum=100 lowerBound=952 upperBound=952 isOptimal=1"  
Content of machines summed (952, 952, 951, 951, 951)  
input selected: size 100 sum 4757

----Our Results-----

best from Our local search found:

target function = 957, num of machines=5

"\n----Comparison for the 41 example----"

\*\*\*tf from benchmark was 957(we added the number of machines) and target function from our local search is 957"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 2))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))

"Avegare error: 0.390244"

"-----END 42 from 130-----"

"-----START 43 from 130-----"

"input file number 43: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_05\_2.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0100\_2.txt"

\*\*\*Data from file U\_1\_0100\_05\_2.txt: machinesNum=5 jobsNum=100"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0100\_2.txt: machinesNum=5 jobsNum=100 lowerBound=972 upperBound=972 isOptimal=1"

Content of machines summed (972, 972, 972, 972, 972)

input selected: size 100 sum 4860

----Our Results-----

best from Our local search found:

target function = 977, num of machines=5

```

"\n----Comparison for the 42 example----"
"***tf from benchmark was 977(we added the number of machines) and target function from our local search is 977"
***RESULT IS THE SAME
Run time: 1.506 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 3))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))
"Avegare error: 0.380952"
"-----END 43 from 130-----"
"-----START 44 from 130-----"
"input file number 44: inputName=C:/algo/h/docs/benchMark/all/U_1_0100_05_3.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_0100_3.txt"
"***Data from file U_1_0100_05_3.txt: machinesNum=5 jobsNum=100"
"***SOLUTION Data from file SOL_U_1_05_0100_3.txt: machinesNum=5 jobsNum=100 lowerBound=1051 upperBound=1051 isOptimal=1"
Content of machines summed (1051, 1051, 1051, 1051, 1048)
input selected: size 100 sum 5252

----Our Results-----
best from Our local search found:
target function = 1056, num of machines=5
"\n----Comparison for the 43 example----"
"***tf from benchmark was 1056(we added the number of machines) and target function from our local search is 1056"
***RESULT IS THE SAME
Run time: 1.599 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 4))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))
"Avegare error: 0.372093"
"-----END 44 from 130-----"
"-----START 45 from 130-----"
"input file number 45: inputName=C:/algo/h/docs/benchMark/all/U_1_0100_05_4.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_0100_4.txt"
"***Data from file U_1_0100_05_4.txt: machinesNum=5 jobsNum=100"
"***SOLUTION Data from file SOL_U_1_05_0100_4.txt: machinesNum=5 jobsNum=100 lowerBound=1009 upperBound=1009 isOptimal=1"

```

Content of machines summed (1008, 1007, 1009, 1009, 1008)  
input selected: size 100 sum 5041

----Our Results-----

best from Our local search found:

target function = 1014, num of machines=5

"\n----Comparison for the 44 example----

\*\*\*\*tf from benchmark was 1014(we added the number of machines) and target function from our local search is 1014"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 5))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))

"Avegare error: 0.363636"

"-----END 45 from 130-----"

"-----START 46 from 130-----"

"input file number 46: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_05\_5.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0100\_5.txt"

\*\*\*\*Data from file U\_1\_0100\_05\_5.txt: machinesNum=5 jobsNum=100"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0100\_5.txt: machinesNum=5 jobsNum=100 lowerBound=1083 upperBound=1083 isOptimal=1"

Content of machines summed (1083, 1083, 1082, 1082, 1081)

input selected: size 100 sum 5411

----Our Results-----

best from Our local search found:

target function = 1088, num of machines=5

"\n----Comparison for the 45 example----

\*\*\*\*tf from benchmark was 1088(we added the number of machines) and target function from our local search is 1088"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 6))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))

"Avegare error: 0.355556"

```
"-----END 46 from 130-----"
"-----START 47 from 130-----"
"input file number 47: inputName=C:/algo/h/docs/benchMark/all/U_1_0100_05_6.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_0100_6.txt"
"***Data from file U_1_0100_05_6.txt: machinesNum=5 jobsNum=100"
"***SOLUTION Data from file SOL_U_1_05_0100_6.txt: machinesNum=5 jobsNum=100 lowerBound=1045 upperBound=1045 isOptimal=1"
Content of machines summed (1045, 1045, 1045, 1045, 1042)
input selected: size 100 sum 5222
```

----Our Results-----

best from Our local search found:

target function = 1050, num of machines=5

"\n----Comparison for the 46 example----

\*\*\*tf from benchmark was 1050(we added the number of machines) and target function from our local search is 1050"

\*\*\*RESULT IS THE SAME

Run time: 1.422 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 7))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))

"Avegare error: 0.347826"

```
"-----END 47 from 130-----"
"-----START 48 from 130-----"
```

```
"input file number 48: inputName=C:/algo/h/docs/benchMark/all/U_1_0100_05_7.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_0100_7.txt"
```

```
"***Data from file U_1_0100_05_7.txt: machinesNum=5 jobsNum=100"
```

```
"***SOLUTION Data from file SOL_U_1_05_0100_7.txt: machinesNum=5 jobsNum=100 lowerBound=977 upperBound=977 isOptimal=1"
```

Content of machines summed (977, 977, 977, 977, 975)

input selected: size 100 sum 4883

----Our Results-----

best from Our local search found:

target function = 982, num of machines=5

"\n----Comparison for the 47 example----

```

****tf from benchmark was 982(we added the number of machines) and target function from our local search is 982"
***RESULT IS THE SAME
Run time: 0 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 8))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))
"Avegare error: 0.340426"
"-----END 48 from 130-----"
"-----START 49 from 130-----"
"input file number 49: inputName=C:/algo/h/docs/benchMark/all/U_1_0100_05_8.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_0100_8.txt"
****Data from file U_1_0100_05_8.txt: machinesNum=5 jobsNum=100"
****SOLUTION Data from file SOL_U_1_05_0100_8.txt: machinesNum=5 jobsNum=100 lowerBound=1063 upperBound=1063 isOptimal=1"
Content of machines summed (1063, 1063, 1063, 1063, 1063)
input selected: size 100 sum 5315

----Our Results-----
best from Our local search found:
target function = 1068, num of machines=5
"\n----Comparison for the 48 example----"
****tf from benchmark was 1068(we added the number of machines) and target function from our local search is 1068"
***RESULT IS THE SAME
Run time: 1.61 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 9))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))
"Avegare error: 0.333333"
"-----END 49 from 130-----"
"-----START 50 from 130-----"
"input file number 50: inputName=C:/algo/h/docs/benchMark/all/U_1_0100_05_9.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_0100_9.txt"
****Data from file U_1_0100_05_9.txt: machinesNum=5 jobsNum=100"
****SOLUTION Data from file SOL_U_1_05_0100_9.txt: machinesNum=5 jobsNum=100 lowerBound=1005 upperBound=1005 isOptimal=1"
Content of machines summed (1005, 1005, 1005, 1005, 1001)

```

input selected: size 100 sum 5021

----Our Results-----

best from Our local search found:

target function = 1010, num of machines=5

"\n----Comparison for the 49 example----"

\*\*\*\*tf from benchmark was 1010(we added the number of machines) and target function from our local search is 1010"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 10))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))

"Avegare error: 0.326531"

"-----END 50 from 130-----"

"-----START 51 from 130-----"

"input file number 51: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_10\_0.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0100\_0.txt"

\*\*\*\*Data from file U\_1\_0100\_10\_0.txt: machinesNum=10 jobsNum=100"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0100\_0.txt: machinesNum=10 jobsNum=100 lowerBound=546 upperBound=546 isOptimal=1"

Content of machines summed (546, 546, 546, 546, 546, 546, 546, 546, 546, 539)

input selected: size 100 sum 5453

----Our Results-----

best from Our local search found:

target function = 556, num of machines=10

"\n----Comparison for the 50 example----"

\*\*\*\*tf from benchmark was 556(we added the number of machines) and target function from our local search is 556"

\*\*\*RESULT IS THE SAME

Run time: 2.797 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 11))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))

"Avegare error: 0.32"

"-----END 51 from 130-----"



"-----START 52 from 130-----"  
"input file number 52: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_10\_1.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0100\_1.txt"  
"\*\*\*Data from file U\_1\_0100\_10\_1.txt: machinesNum=10 jobsNum=100"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0100\_1.txt: machinesNum=10 jobsNum=100 lowerBound=442 upperBound=442 isOptimal=1"  
Content of machines summed (442, 442, 442, 442, 442, 442, 442, 442, 442, 441)  
input selected: size 100 sum 4419

----Our Results-----

best from Our local search found:

target function = 452, num of machines=10

"\n----Comparison for the 51 example----

\*\*\*tf from benchmark was 452(we added the number of machines) and target function from our local search is 452"

\*\*\*RESULT IS THE SAME

Run time: 2.625 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 12))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))

"Avegare error: 0.313725"

"-----END 52 from 130-----"

"-----START 53 from 130-----"

"input file number 53: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_10\_2.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0100\_2.txt"

\*\*\*Data from file U\_1\_0100\_10\_2.txt: machinesNum=10 jobsNum=100"

\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0100\_2.txt: machinesNum=10 jobsNum=100 lowerBound=508 upperBound=508 isOptimal=1"

Content of machines summed (508, 508, 508, 508, 507, 507, 507, 508, 507, 507)

input selected: size 100 sum 5075

----Our Results-----

best from Our local search found:

target function = 518, num of machines=10

"\n----Comparison for the 52 example----

\*\*\*tf from benchmark was 518(we added the number of machines) and target function from our local search is 518"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 13))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10))

"Avegare error: 0.307692"

"-----END 53 from 130-----"

"-----START 54 from 130-----"

"input file number 54: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_10\_3.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0100\_3.txt"

\*\*\*Data from file U\_1\_0100\_10\_3.txt: machinesNum=10 jobsNum=100"

\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0100\_3.txt: machinesNum=10 jobsNum=100 lowerBound=492 upperBound=492 isOptimal=1"

Content of machines summed (492, 492, 492, 492, 492, 492, 492, 492, 492, 492)

input selected: size 100 sum 4920

----Our Results-----

best from Our local search found:

target function = 503, num of machines=10

"\n----Comparison for the 53 example----

\*\*\*tf from benchmark was 502(we added the number of machines) and target function from our local search is 503"

\*\*\*Different 1

Run time: 4.188 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 13))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 1))

"Avegare error: 0.320755"

"-----END 54 from 130-----"

"-----START 55 from 130-----"

"input file number 55: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_10\_4.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0100\_4.txt"

\*\*\*Data from file U\_1\_0100\_10\_4.txt: machinesNum=10 jobsNum=100"

\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0100\_4.txt: machinesNum=10 jobsNum=100 lowerBound=518 upperBound=518 isOptimal=1"

Content of machines summed (518, 518, 518, 518, 518, 518, 518, 518, 518, 517)

input selected: size 100 sum 5179

----Our Results-----

best from Our local search found:

target function = 528, num of machines=10

"\n----Comparison for the 54 example----

\*\*\*\*tf from benchmark was 528(we added the number of machines) and target function from our local search is 528"

\*\*\*RESULT IS THE SAME

Run time: 0.031 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 14))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 1))

"Avegare error: 0.314815"

"-----END 55 from 130-----"

"-----START 56 from 130-----"

"input file number 56: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_10\_5.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0100\_5.txt"

\*\*\*\*Data from file U\_1\_0100\_10\_5.txt: machinesNum=10 jobsNum=100"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0100\_5.txt: machinesNum=10 jobsNum=100 lowerBound=530 upperBound=530 isOptimal=1"

Content of machines summed (530, 530, 530, 530, 530, 530, 530, 530, 530, 529)

input selected: size 100 sum 5299

----Our Results-----

best from Our local search found:

target function = 540, num of machines=10

"\n----Comparison for the 55 example----

\*\*\*\*tf from benchmark was 540(we added the number of machines) and target function from our local search is 540"

\*\*\*RESULT IS THE SAME

Run time: 2.719 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 15))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 1))

"Avegare error: 0.309091"

"-----END 56 from 130-----"

"-----START 57 from 130-----"

"input file number 57: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_10\_6.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0100\_6.txt"  
"\*\*\*Data from file U\_1\_0100\_10\_6.txt: machinesNum=10 jobsNum=100"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0100\_6.txt: machinesNum=10 jobsNum=100 lowerBound=516 upperBound=516 isOptimal=1"  
Content of machines summed (516, 516, 516, 516, 516, 516, 516, 516, 516, 511)  
input selected: size 100 sum 5155

----Our Results-----

best from Our local search found:

target function = 526, num of machines=10

"\n----Comparison for the 56 example----

\*\*\*tf from benchmark was 526(we added the number of machines) and target function from our local search is 526"

\*\*\*RESULT IS THE SAME

Run time: 2.766 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 16))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 1))

"Avegare error: 0.303571"

"-----END 57 from 130-----"

"-----START 58 from 130-----"

"input file number 58: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_10\_7.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0100\_7.txt"

\*\*\*Data from file U\_1\_0100\_10\_7.txt: machinesNum=10 jobsNum=100"

\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0100\_7.txt: machinesNum=10 jobsNum=100 lowerBound=515 upperBound=515 isOptimal=1"

Content of machines summed (515, 515, 515, 515, 515, 515, 515, 515, 515, 514)

input selected: size 100 sum 5149

----Our Results-----

best from Our local search found:

target function = 525, num of machines=10

"\n----Comparison for the 57 example----

\*\*\*tf from benchmark was 525(we added the number of machines) and target function from our local search is 525"

\*\*\*RESULT IS THE SAME

Run time: 2.531 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 17))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 1))

"Avegare error: 0.298246"

"-----END 58 from 130-----"

"-----START 59 from 130-----"

"input file number 59: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_10\_8.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0100\_8.txt"

\*\*\*\*Data from file U\_1\_0100\_10\_8.txt: machinesNum=10 jobsNum=100"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0100\_8.txt: machinesNum=10 jobsNum=100 lowerBound=494 upperBound=494 isOptimal=1"

Content of machines summed (494, 494, 494, 494, 494, 494, 494, 494, 494, 493)

input selected: size 100 sum 4939

----Our Results-----

best from Our local search found:

target function = 504, num of machines=10

"\n----Comparison for the 58 example----"

\*\*\*\*tf from benchmark was 504(we added the number of machines) and target function from our local search is 504"

\*\*\*RESULT IS THE SAME

Run time: 3.047 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 18))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 1))

"Avegare error: 0.293103"

"-----END 59 from 130-----"

"-----START 60 from 130-----"

"input file number 60: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_10\_9.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0100\_9.txt"

\*\*\*\*Data from file U\_1\_0100\_10\_9.txt: machinesNum=10 jobsNum=100"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0100\_9.txt: machinesNum=10 jobsNum=100 lowerBound=461 upperBound=461 isOptimal=1"

Content of machines summed (461, 461, 461, 461, 461, 461, 461, 461, 461, 457)

input selected: size 100 sum 4606

"-----START 62 from 130-----"

"input file number 62: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_25\_1.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0100\_1.txt"  
"\*\*\*Data from file U\_1\_0100\_25\_1.txt: machinesNum=25 jobsNum=100"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0100\_1.txt: machinesNum=25 jobsNum=100 lowerBound=195 upperBound=195 isOptimal=1"  
Content of machines summed (195, 193)  
input selected: size 100 sum 4873

----Our Results-----

best from Our local search found:

target function = 221, num of machines=25

"\n----Comparison for the 61 example----

\*\*\*tf from benchmark was 220(we added the number of machines) and target function from our local search is 221"

\*\*\*Different 1

Run time: 49.464 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 20))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 2))

"Avegare error: 0.295082"

"-----END 62 from 130-----"

"-----START 63 from 130-----"

"input file number 63: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_25\_2.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0100\_2.txt"

\*\*\*Data from file U\_1\_0100\_25\_2.txt: machinesNum=25 jobsNum=100"

\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0100\_2.txt: machinesNum=25 jobsNum=100 lowerBound=199 upperBound=199 isOptimal=1"

Content of machines summed (199, 184)

input selected: size 100 sum 4960

----Our Results-----

best from Our local search found:

target function = 224, num of machines=25

"\n----Comparison for the 62 example----





Content of machines summed (191, 172)

input selected: size 100 sum 4756

----Our Results-----

best from Our local search found:

target function = 216, num of machines=25

"\n----Comparison for the 64 example----"

\*\*\*\*tf from benchmark was 216(we added the number of machines) and target function from our local search is 216"

\*\*\*RESULT IS THE SAME

Run time: 29.291 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 22))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 3))

"Avegare error: 0.3125"

"-----END 65 from 130-----"

"-----START 66 from 130-----"

"input file number 66: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_25\_5.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0100\_5.txt"

\*\*\*\*Data from file U\_1\_0100\_25\_5.txt: machinesNum=25 jobsNum=100"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0100\_5.txt: machinesNum=25 jobsNum=100 lowerBound=219 upperBound=219 isOptimal=1"

Content of machines summed (219, 218, 204)

input selected: size 100 sum 5459

----Our Results-----

best from Our local search found:

target function = 247, num of machines=25

"\n----Comparison for the 65 example----"

\*\*\*\*tf from benchmark was 244(we added the number of machines) and target function from our local search is 247"

\*\*\*Different 3

Run time: 44.997 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 22))

```

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 4))
"Avegare error: 0.353846"
"-----END 66 from 130-----"
"-----START 67 from 130-----"
"input file number 67: inputName=C:/algo/h/docs/benchMark/all/U_1_0100_25_6.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_0100_6.txt"
"***Data from file U_1_0100_25_6.txt: machinesNum=25 jobsNum=100"
"***SOLUTION Data from file SOL_U_1_25_0100_6.txt: machinesNum=25 jobsNum=100 lowerBound=194 upperBound=194 isOptimal=1"
Content of machines summed (194, 194, 194, 194, 194, 194, 194, 194, 194, 194, 194, 194, 194, 194, 194, 194, 194, 194, 194, 194,
194, 194, 171)
input selected: size 100 sum 4827

----Our Results-----
best from Our local search found:
target function = 219, num of machines=25
"\n----Comparison for the 66 example----"
"***tf from benchmark was 219(we added the number of machines) and target function from our local search is 219"
***RESULT IS THE SAME
Run time: 27.497 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 23))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 4))
"Avegare error: 0.348485"
"-----END 67 from 130-----"
"-----START 68 from 130-----"
"input file number 68: inputName=C:/algo/h/docs/benchMark/all/U_1_0100_25_7.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_0100_7.txt"
"***Data from file U_1_0100_25_7.txt: machinesNum=25 jobsNum=100"
"***SOLUTION Data from file SOL_U_1_25_0100_7.txt: machinesNum=25 jobsNum=100 lowerBound=214 upperBound=214 isOptimal=1"
Content of machines summed (214, 214, 214, 214, 214, 214, 214, 214, 214, 214, 214, 214, 214, 214, 214, 214, 214, 214, 214, 214,
214, 214, 193)
input selected: size 100 sum 5329

```

----Our Results-----

best from Our local search found:

target function = 239, num of machines=25

"\n----Comparison for the 67 example----

\*\*\*\*tf from benchmark was 239(we added the number of machines) and target function from our local search is 239"

\*\*\*RESULT IS THE SAME

Run time: 29.941 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 4))

"Avegare error: 0.343284"

"-----END 68 from 130-----"

"-----START 69 from 130-----"

"input file number 69: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0100\_25\_8.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0100\_8.txt"

\*\*\*\*Data from file U\_1\_0100\_25\_8.txt: machinesNum=25 jobsNum=100"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0100\_8.txt: machinesNum=25 jobsNum=100 lowerBound=205 upperBound=205 isOptimal=1"

Content of machines summed (205, 200)

input selected: size 100 sum 5120

----Our Results-----

best from Our local search found:

target function = 231, num of machines=25

"\n----Comparison for the 68 example----

\*\*\*\*tf from benchmark was 230(we added the number of machines) and target function from our local search is 231"

\*\*\*Different 1

Run time: 47.75 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 5))

"Avegare error: 0.352941"

"-----END 69 from 130-----"

"-----START 70 from 130-----"

```
"input file number 70: inputName=C:/algo/h/docs/benchMark/all/U_1_0100_25_9.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_0100_9.txt"  
"***Data from file U_1_0100_25_9.txt: machinesNum=25 jobsNum=100"  
"***SOLUTION Data from file SOL_U_1_25_0100_9.txt: machinesNum=25 jobsNum=100 lowerBound=203 upperBound=203 isOptimal=1"  
Content of machines summed (203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203, 203,  
203, 203, 198)  
input selected: size 100 sum 5070
```

## ---Our Results-----

best from Our local search found:

target function = 231, num of machines=25

"\n----Comparison for the 69 example----"

\*\*\*tf from benchmark was 228(we added the number of machines) and target function from our local search is 231"

### \*\*\*Different 3

Run time: 48.469 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.391304"

"-----END 70 from 130-----"

"-----START 71 from 130-----"

"input file number 71: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_05\_0.txt and

```
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_0500_0.txt"
```

\*\*\*Data from file U\_1\_0500\_05\_0.txt: machinesNum=5 jobsNum=500"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0500\_0.txt: machinesNum=5 jobsNum=500 lowerBound=5107 upperBound=5107 isOptimal=1"

Content of machines summed (5107, 5106, 5106, 5106, 5106)

input selected: size 500 sum 25531

----Our Results-----

best from Our local search found:

target function = 5112, num of machines=5

"\n---Comparison for the 70 example---"

\*\*\*tf from benchmark was 5112(we added the number of machines) and target function from our local search is 5112"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 1))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.385714"

"-----END 71 from 130-----"

"-----START 72 from 130-----"

"input file number 72: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_05\_1.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0500\_1.txt"

\*\*\*Data from file U\_1\_0500\_05\_1.txt: machinesNum=5 jobsNum=500"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0500\_1.txt: machinesNum=5 jobsNum=500 lowerBound=4971 upperBound=4971 isOptimal=1"

Content of machines summed (4971, 4970, 4970, 4970, 4970)

input selected: size 500 sum 24851

----Our Results-----

best from Our local search found:

target function = 4976, num of machines=5

"\n----Comparison for the 71 example----"

\*\*\*tf from benchmark was 4976(we added the number of machines) and target function from our local search is 4976"

\*\*\*RESULT IS THE SAME

Run time: 0.015 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 2))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.380282"

"-----END 72 from 130-----"

"-----START 73 from 130-----"

"input file number 73: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_05\_2.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0500\_2.txt"

\*\*\*Data from file U\_1\_0500\_05\_2.txt: machinesNum=5 jobsNum=500"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0500\_2.txt: machinesNum=5 jobsNum=500 lowerBound=5086 upperBound=5086 isOptimal=1"

Content of machines summed (5086, 5085, 5085, 5085, 5085)

input selected: size 500 sum 25426

----Our Results-----

best from Our local search found:

target function = 5091, num of machines=5

"\n----Comparison for the 72 example----

\*\*\*\*tf from benchmark was 5091(we added the number of machines) and target function from our local search is 5091"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 3))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.375"

"-----END 73 from 130-----"

"-----START 74 from 130-----"

"input file number 74: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_05\_3.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0500\_3.txt"

\*\*\*\*Data from file U\_1\_0500\_05\_3.txt: machinesNum=5 jobsNum=500"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0500\_3.txt: machinesNum=5 jobsNum=500 lowerBound=4888 upperBound=4888 isOptimal=1"

Content of machines summed (4888, 4888, 4888, 4887, 4887)

input selected: size 500 sum 24438

----Our Results-----

best from Our local search found:

target function = 4893, num of machines=5

"\n----Comparison for the 73 example----

\*\*\*\*tf from benchmark was 4893(we added the number of machines) and target function from our local search is 4893"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 4))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.369863"

"-----END 74 from 130-----"

"-----START 75 from 130-----"

"input file number 75: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_05\_4.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0500\_4.txt"  
"\*\*\*Data from file U\_1\_0500\_05\_4.txt: machinesNum=5 jobsNum=500"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0500\_4.txt: machinesNum=5 jobsNum=500 lowerBound=4926 upperBound=4926 isOptimal=1 "  
Content of machines summed (4926, 4926, 4926, 4926, 4925)  
input selected: size 500 sum 24629

----Our Results-----

best from Our local search found:

target function = 4931, num of machines=5

"\n----Comparison for the 74 example----

"\*\*\*tf from benchmark was 4931(we added the number of machines) and target function from our local search is 4931"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 5))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.364865"

"-----END 75 from 130-----"

"-----START 76 from 130-----"

"input file number 76: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_05\_5.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0500\_5.txt"

"\*\*\*Data from file U\_1\_0500\_05\_5.txt: machinesNum=5 jobsNum=500"

"\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0500\_5.txt: machinesNum=5 jobsNum=500 lowerBound=5221 upperBound=5221 isOptimal=1 "

Content of machines summed (5221, 5220, 5220, 5220, 5220)

input selected: size 500 sum 26101

----Our Results-----

best from Our local search found:

target function = 5226, num of machines=5

"\n----Comparison for the 75 example----

"\*\*\*tf from benchmark was 5226(we added the number of machines) and target function from our local search is 5226"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 6))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.36"

"-----END 76 from 130-----"

"-----START 77 from 130-----"

"input file number 77: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_05\_6.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0500\_6.txt"

\*\*\*\*Data from file U\_1\_0500\_05\_6.txt: machinesNum=5 jobsNum=500"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0500\_6.txt: machinesNum=5 jobsNum=500 lowerBound=5153 upperBound=5153 isOptimal=1"

Content of machines summed (5153, 5152, 5152, 5152, 5152)

input selected: size 500 sum 25761

----Our Results-----

best from Our local search found:

target function = 5158, num of machines=5

"\n----Comparison for the 76 example----"

\*\*\*\*tf from benchmark was 5158(we added the number of machines) and target function from our local search is 5158"

\*\*\*RESULT IS THE SAME

Run time: 0.031 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 7))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.355263"

"-----END 77 from 130-----"

"-----START 78 from 130-----"

"input file number 78: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_05\_7.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0500\_7.txt"

\*\*\*\*Data from file U\_1\_0500\_05\_7.txt: machinesNum=5 jobsNum=500"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0500\_7.txt: machinesNum=5 jobsNum=500 lowerBound=4841 upperBound=4841 isOptimal=1"

Content of machines summed (4841, 4841, 4841, 4840, 4840)

input selected: size 500 sum 24203



----Our Results-----

best from Our local search found:

target function = 4846, num of machines=5

"\n----Comparison for the 77 example----

\*\*\*\*tf from benchmark was 4846(we added the number of machines) and target function from our local search is 4846"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 8))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.350649"

"-----END 78 from 130-----"

"-----START 79 from 130-----"

"input file number 79: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_05\_8.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0500\_8.txt"

\*\*\*\*Data from file U\_1\_0500\_05\_8.txt: machinesNum=5 jobsNum=500"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0500\_8.txt: machinesNum=5 jobsNum=500 lowerBound=4918 upperBound=4918 isOptimal=1"

Content of machines summed (4918, 4918, 4918, 4918, 4917)

input selected: size 500 sum 24589

----Our Results-----

best from Our local search found:

target function = 4923, num of machines=5

"\n----Comparison for the 78 example----

\*\*\*\*tf from benchmark was 4923(we added the number of machines) and target function from our local search is 4923"

\*\*\*RESULT IS THE SAME

Run time: 0.015 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 9))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.346154"

"-----END 79 from 130-----"

"-----START 80 from 130-----"

"input file number 80: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_05\_9.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_0500\_9.txt"  
"\*\*\*Data from file U\_1\_0500\_05\_9.txt: machinesNum=5 jobsNum=500"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_0500\_9.txt: machinesNum=5 jobsNum=500 lowerBound=5004 upperBound=5004 isOptimal=1"  
Content of machines summed (5004, 5004, 5004, 5004, 5004)  
input selected: size 500 sum 25020

----Our Results-----

best from Our local search found:

target function = 5009, num of machines=5

"\n----Comparison for the 79 example----

\*\*\*tf from benchmark was 5009(we added the number of machines) and target function from our local search is 5009"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 10))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.341772"

"-----END 80 from 130-----"

"-----START 81 from 130-----"

"input file number 81: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_10\_0.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0500\_0.txt"

\*\*\*Data from file U\_1\_0500\_10\_0.txt: machinesNum=10 jobsNum=500"

\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0500\_0.txt: machinesNum=10 jobsNum=500 lowerBound=2520 upperBound=2520  
isOptimal=1"

Content of machines summed (2520, 2520, 2520, 2520, 2520, 2520, 2520, 2520, 2520, 2517)

input selected: size 500 sum 25197

----Our Results-----

best from Our local search found:

target function = 2530, num of machines=10

"\n----Comparison for the 80 example----

\*\*\*tf from benchmark was 2530(we added the number of machines) and target function from our local search is 2530"

\*\*\*RESULT IS THE SAME

Run time: 0.031 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 11))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.3375"

"-----END 81 from 130-----"

"-----START 82 from 130-----"

"input file number 82: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_10\_1.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0500\_1.txt"

\*\*\*Data from file U\_1\_0500\_10\_1.txt: machinesNum=10 jobsNum=500"

\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0500\_1.txt: machinesNum=10 jobsNum=500 lowerBound=2451 upperBound=2451  
isOptimal=1"

Content of machines summed (2451, 2451, 2451, 2451, 2451, 2451, 2451, 2451, 2451, 2448)

input selected: size 500 sum 24507

----Our Results-----

best from Our local search found:

target function = 2461, num of machines=10

"\n----Comparison for the 81 example----"

\*\*\*tf from benchmark was 2461(we added the number of machines) and target function from our local search is 2461"

\*\*\*RESULT IS THE SAME

Run time: 0.11 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 12))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.333333"

"-----END 82 from 130-----"

"-----START 83 from 130-----"

"input file number 83: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_10\_2.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0500\_2.txt"

\*\*\*Data from file U\_1\_0500\_10\_2.txt: machinesNum=10 jobsNum=500"

\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0500\_2.txt: machinesNum=10 jobsNum=500 lowerBound=2538 upperBound=2538  
isOptimal=1"

Content of machines summed (2538, 2538, 2538, 2538, 2538, 2538, 2538, 2538, 2537, 2537)  
input selected: size 500 sum 25378

----Our Results-----

best from Our local search found:

target function = 2548, num of machines=10

"\n----Comparison for the 82 example----"

\*\*\*\*tf from benchmark was 2548(we added the number of machines) and target function from our local search is 2548"

\*\*\*RESULT IS THE SAME

Run time: 0.015 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 13))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.329268"

"-----END 83 from 130-----"

"-----START 84 from 130-----"

"input file number 84: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_10\_3.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0500\_3.txt"

\*\*\*\*Data from file U\_1\_0500\_10\_3.txt: machinesNum=10 jobsNum=500"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0500\_3.txt: machinesNum=10 jobsNum=500 lowerBound=2392 upperBound=2392  
isOptimal=1"

Content of machines summed (2392, 2392, 2392, 2392, 2392, 2392, 2392, 2392, 2392, 2392)  
input selected: size 500 sum 23920

----Our Results-----

best from Our local search found:

target function = 2402, num of machines=10

"\n----Comparison for the 83 example----"

\*\*\*\*tf from benchmark was 2402(we added the number of machines) and target function from our local search is 2402"

\*\*\*RESULT IS THE SAME

Run time: 0.078 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 14))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

```
"Avegare error: 0.325301"
"-----END 84 from 130-----"
"-----START 85 from 130-----"
"input file number 85: inputName=C:/algo/h/docs/benchMark/all/U_1_0500_10_4.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_10_0500_4.txt"
"***Data from file U_1_0500_10_4.txt: machinesNum=10 jobsNum=500"
"***SOLUTION Data from file SOL_U_1_10_0500_4.txt: machinesNum=10 jobsNum=500 lowerBound=2505 upperBound=2505
isOptimal=1"
Content of machines summed (2505, 2504, 2505, 2504, 2504, 2504, 2504, 2504, 2504, 2503)
input selected: size 500 sum 25041
```

----Our Results-----

best from Our local search found:

target function = 2515, num of machines=10

"\n----Comparison for the 84 example----

\*\*\*tf from benchmark was 2515(we added the number of machines) and target function from our local search is 2515"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 15))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.321429"

"-----END 85 from 130-----"

"-----START 86 from 130-----"

"input file number 86: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_10\_5.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0500\_5.txt"

\*\*\*Data from file U\_1\_0500\_10\_5.txt: machinesNum=10 jobsNum=500"

\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0500\_5.txt: machinesNum=10 jobsNum=500 lowerBound=2542 upperBound=2542  
isOptimal=1"

Content of machines summed (2542, 2542, 2542, 2542, 2542, 2541, 2541, 2541, 2541, 2541)

input selected: size 500 sum 25415

----Our Results-----

best from Our local search found:

target function = 2552, num of machines=10

"\n---Comparison for the 85 example---"

\*\*\*\*tf from benchmark was 2552(we added the number of machines) and target function from our local search is 2552"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 16))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.317647"

"-----END 86 from 130-----"

"-----START 87 from 130-----"

"input file number 87: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_10\_6.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0500\_6.txt"

\*\*\*\*Data from file U\_1\_0500\_10\_6.txt: machinesNum=10 jobsNum=500"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0500\_6.txt: machinesNum=10 jobsNum=500 lowerBound=2534 upperBound=2534  
isOptimal=1"

Content of machines summed (2534, 2534, 2534, 2534, 2534, 2534, 2534, 2534, 2534, 2533)

input selected: size 500 sum 25339

----Our Results-----

best from Our local search found:

target function = 2544, num of machines=10

"\n---Comparison for the 86 example---"

\*\*\*\*tf from benchmark was 2544(we added the number of machines) and target function from our local search is 2544"

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 17))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.313953"

"-----END 87 from 130-----"

"-----START 88 from 130-----"

"input file number 88: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_10\_7.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0500\_7.txt"  
"\*\*\*Data from file U\_1\_0500\_10\_7.txt: machinesNum=10 jobsNum=500"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0500\_7.txt: machinesNum=10 jobsNum=500 lowerBound=2513 upperBound=2513  
isOptimal=1"  
Content of machines summed (2513, 2513, 2513, 2513, 2513, 2513, 2513, 2513, 2513, 2510)  
input selected: size 500 sum 25127

----Our Results-----

best from Our local search found:

target function = 2523, num of machines=10

"\n----Comparison for the 87 example----

\*\*\*tf from benchmark was 2523(we added the number of machines) and target function from our local search is 2523"

\*\*\*RESULT IS THE SAME

Run time: 0.015 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 18))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.310345"

"-----END 88 from 130-----"

"-----START 89 from 130-----"

"input file number 89: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_10\_8.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_0500\_8.txt"

\*\*\*Data from file U\_1\_0500\_10\_8.txt: machinesNum=10 jobsNum=500"

\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_0500\_8.txt: machinesNum=10 jobsNum=500 lowerBound=2569 upperBound=2569

isOptimal=1"

Content of machines summed (2569, 2569, 2569, 2569, 2569, 2569, 2568, 2569, 2568, 2568)

input selected: size 500 sum 25687

----Our Results-----

best from Our local search found:

target function = 2579, num of machines=10

"\n----Comparison for the 88 example----

```
****tf from benchmark was 2579(we added the number of machines) and target function from our local search is 2579"
***RESULT IS THE SAME
Run time: 0.016 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 19))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.306818"
"-----END 89 from 130-----"
"-----START 90 from 130-----"
"input file number 90: inputName=C:/algo/h/docs/benchMark/all/U_1_0500_10_9.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_10_0500_9.txt"
****Data from file U_1_0500_10_9.txt: machinesNum=10 jobsNum=500"
****SOLUTION Data from file SOL_U_1_10_0500_9.txt: machinesNum=10 jobsNum=500 lowerBound=2544 upperBound=2544
isOptimal=1"
Content of machines summed (2543, 2544, 2543, 2543, 2544, 2544, 2544, 2543, 2543, 2542)
input selected: size 500 sum 25433
```

----Our Results-----

best from Our local search found:

target function = 2554, num of machines=10

"\n----Comparison for the 89 example----"

```
****tf from benchmark was 2554(we added the number of machines) and target function from our local search is 2554"
```

\*\*\*RESULT IS THE SAME

Run time: 0 seconds

```
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 20))
```

```
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
```

```
"Avegare error: 0.303371"
```

```
"-----END 90 from 130-----"
```

```
"-----START 91 from 130-----"
```

```
"input file number 91: inputName=C:/algo/h/docs/benchMark/all/U_1_0500_25_0.txt and
```

```
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_0500_0.txt"
```

```
****Data from file U_1_0500_25_0.txt: machinesNum=25 jobsNum=500"
```





Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 22))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.296703"

"-----END 92 from 130-----"

"-----START 93 from 130-----"

"input file number 93: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_25\_2.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0500\_2.txt"

\*\*\*Data from file U\_1\_0500\_25\_2.txt: machinesNum=25 jobsNum=500"

\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0500\_2.txt: machinesNum=25 jobsNum=500 lowerBound=998 upperBound=998 isOptimal=1"

[illegible]

input selected: size 500 sum 24934

----Our Results-----

best from Our local search found:

target function = 1023, num of machines=25

"\n----Comparison for the 92 example----"

\*\*\*tf from benchmark was 1023(we added the number of machines) and target function from our local search is 1023"

\*\*\*RESULT IS THE SAME

Run time: 0.031 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 23))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.293478"

"-----END 93 from 130-----"

"-----START 94 from 130-----"

"input file number 94: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_25\_3.txt and

```
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_0500_3.txt"
```

\*\*\*Data from file U\_1\_0500\_25\_3.txt: machinesNum=25 jobsNum=500

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0500\_3.txt: machinesNum=25 jobsNum=500 lowerBound=995 upperBound=995 isOptimal=1"

[illegible]

----Our Results-----

target function = 1020, num of machines=25

"\n---Comparison for the 93 example---"

\*\*\*RESULT IS THE SAME

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 24))

```
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
```

"Avegare error: 0.290323"

"-----END 94 from 130-----"

"-----START 95 from 130-----"

"input file number 95: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_25\_4.txt and

```
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_0500_4.txt"
```

\*\*\*Data from file U\_1\_0500\_25\_4.txt: machinesNum=25 jobsNum=500

\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0500\_4.txt: machinesNum=25 jobsNum=500 lowerBound=1012 upperBound=1012

```
isOptimal=1"
```

[illegible]

input selected: size 500 sum 25300

----Our Results-----

target function = 1037, num of machines=25

"\n---Comparison for the 94 example---"

\*\*\*tf from benchmark was 1037(we added the number of machines) and target function from our local search is 1037"

\*\*\*RESULT IS THE SAME

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 25))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

```
"Avegare error: 0.287234"  
"-----END 95 from 130-----"  
"-----START 96 from 130-----"  
"input file number 96: inputName=C:/algo/h/docs/benchMark/all/U_1_0500_25_5.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_0500_5.txt"  
"***Data from file U_1_0500_25_5.txt: machinesNum=25 jobsNum=500"  
"***SOLUTION Data from file SOL_U_1_25_0500_5.txt: machinesNum=25 jobsNum=500 lowerBound=975 upperBound=975 isOptimal=1"  
Content of machines summed (975, 975, 975, 975, 975, 975, 975, 975, 975, 975, 975, 975, 975, 975, 975, 975, 975, 975,  
975, 975, 965)  
input selected: size 500 sum 24365
```

----Our Results-----

best from Our local search found:

target function = 1000, num of machines=25

"\n---Comparison for the 95 example---"

\*\*\*tf from benchmark was 1000(we added the number of machines) and target function from our local search is 1000"

\*\*\*RESULT IS THE SAME

Run time: 993.117 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 26))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.284211"

"-----END 96 from 130-----"

"-----START 97 from 130-----"

"input file number 97: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_25\_6.txt and

```
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_0500_6.txt"
```

\*\*\*Data from file U\_1\_0500\_25\_6.txt: machinesNum=25 jobsNum=500"

\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0500\_6.txt: machinesNum=25 jobsNum=500 lowerBound=991 upperBound=991 isOptimal=1"

Content of machines summed (990, 991, 990, 990, 990, 990, 991, 990, 989, 991, 991, 991, 991, 990, 991, 991, 991, 991, 989, 990, 991, 991, 991, 990, 989)

input selected: size 500 sum 24760

----Our Results-----

best from Our local search found:

target function = 1016, num of machines=25

"\n---Comparison for the 96 example---"

\*\*\*\*tf from benchmark was 1016(we added the number of machines) and target function from our local search is 1016"

\*\*\*RESULT IS THE SAME

Run time: 1000.85 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 27))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.28125"

"-----END 97 from 130-----"

"-----START 98 from 130-----"

"input file number 98: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_25\_7.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0500\_7.txt"

\*\*\*\*Data from file U\_1\_0500\_25\_7.txt: machinesNum=25 jobsNum=500"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0500\_7.txt: machinesNum=25 jobsNum=500 lowerBound=1000 upperBound=1000  
isOptimal=1"

Content of machines summed (999, 999, 999, 999, 999, 999, 999, 1000, 1000, 999, 999, 999, 1000, 999, 999, 998, 999, 999, 999, 999, 1000,  
999, 998, 999, 998)

input selected: size 500 sum 24976

----Our Results-----

best from Our local search found:

target function = 1025, num of machines=25

"\n---Comparison for the 97 example---"

\*\*\*\*tf from benchmark was 1025(we added the number of machines) and target function from our local search is 1025"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 28))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.278351"

"-----END 98 from 130-----"

"-----START 99 from 130-----"

"input file number 99: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_25\_8.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0500\_8.txt"  
"\*\*\*Data from file U\_1\_0500\_25\_8.txt: machinesNum=25 jobsNum=500"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0500\_8.txt: machinesNum=25 jobsNum=500 lowerBound=953 upperBound=953 isOptimal=1"  
Content of machines summed (953, 952, 952, 953, 952, 951, 953, 953, 953, 953, 951, 951, 953, 953, 952, 952, 952, 952, 951, 951,  
951, 952, 952)  
input selected: size 500 sum 23803

----Our Results-----

best from Our local search found:

target function = 978, num of machines=25

"\n----Comparison for the 98 example----

\*\*\*tf from benchmark was 978(we added the number of machines) and target function from our local search is 978"

\*\*\*RESULT IS THE SAME

Run time: 0.015 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 29))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.27551"

"-----END 99 from 130-----"

"-----START 100 from 130-----"

"input file number 100: inputName=C:/algo/h/docs/benchMark/all/U\_1\_0500\_25\_9.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_0500\_9.txt"

\*\*\*Data from file U\_1\_0500\_25\_9.txt: machinesNum=25 jobsNum=500"

\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_0500\_9.txt: machinesNum=25 jobsNum=500 lowerBound=988 upperBound=988 isOptimal=1"

Content of machines summed (988,  
988, 988, 981)

input selected: size 500 sum 24693

----Our Results-----

best from Our local search found:

target function = 1013, num of machines=25

"\n----Comparison for the 99 example----

```

****tf from benchmark was 1013(we added the number of machines) and target function from our local search is 1013"
***RESULT IS THE SAME
Run time: 1008.05 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.272727"
"-----END 100 from 130-----"
"-----START 101 from 130-----"
"input file number 101: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_05_0.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_1000_0.txt"
****Data from file U_1_1000_05_0.txt: machinesNum=5 jobsNum=1000"
****SOLUTION Data from file SOL_U_1_05_1000_0.txt: machinesNum=5 jobsNum=1000 lowerBound=9990 upperBound=9990
isOptimal=1"
Content of machines summed (9990, 9990, 9989, 9989, 9989)
input selected: size 1000 sum 49947

```

----Our Results-----

best from Our local search found:

target function = 9995, num of machines=5

"\n----Comparison for the 100 example----

```

****tf from benchmark was 9995(we added the number of machines) and target function from our local search is 9995"

```

```

***RESULT IS THE SAME

```

```

Run time: 0.016 seconds

```

```

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 1))

```

```

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

```

```

"Avegare error: 0.27"

```

```

"-----END 101 from 130-----"

```

```

"-----START 102 from 130-----"

```

```

"input file number 102: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_05_1.txt and

```

```

solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_1000_1.txt"

```

```

****Data from file U_1_1000_05_1.txt: machinesNum=5 jobsNum=1000"

```

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_1000\_1.txt: machinesNum=5 jobsNum=1000 lowerBound=10263 upperBound=10263 isOptimal=1"

Content of machines summed (10263, 10263, 10263, 10262, 10262)

input selected: size 1000 sum 51313

----Our Results-----

best from Our local search found:

target function = 10268, num of machines=5

"\n----Comparison for the 101 example----

\*\*\*tf from benchmark was 10268(we added the number of machines) and target function from our local search is 10268"

\*\*\*RESULT IS THE SAME

Run time: 0.015 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 2))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.267327"

"-----END 102 from 130-----"

"-----START 103 from 130-----"

"input file number 103: inputName=C:/algo/h/docs/benchMark/all/U\_1\_1000\_05\_2.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_1000\_2.txt"

\*\*\*Data from file U\_1\_1000\_05\_2.txt: machinesNum=5 jobsNum=1000"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_1000\_2.txt: machinesNum=5 jobsNum=1000 lowerBound=10073 upperBound=10073 isOptimal=1"

Content of machines summed (10073, 10073, 10073, 10072, 10072)

input selected: size 1000 sum 50363

----Our Results-----

best from Our local search found:

target function = 10078, num of machines=5

"\n----Comparison for the 102 example----

\*\*\*tf from benchmark was 10078(we added the number of machines) and target function from our local search is 10078"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds



```

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 3))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.264706"
"-----END 103 from 130-----"
"-----START 104 from 130-----"
"input file number 104: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_05_3.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_1000_3.txt"
"***Data from file U_1_1000_05_3.txt: machinesNum=5 jobsNum=1000"
"***SOLUTION Data from file SOL_U_1_05_1000_3.txt: machinesNum=5 jobsNum=1000 lowerBound=10106 upperBound=10106
isOptimal=1"
Content of machines summed (10106, 10106, 10105, 10105, 10105)
input selected: size 1000 sum 50527

----Our Results-----
best from Our local search found:
target function = 10111, num of machines=5
"\n----Comparison for the 103 example----"
"***tf from benchmark was 10111(we added the number of machines) and target function from our local search is 10111"
***RESULT IS THE SAME
Run time: 0 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 4))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.262136"
"-----END 104 from 130-----"
"-----START 105 from 130-----"
"input file number 105: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_05_4.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_1000_4.txt"
"***Data from file U_1_1000_05_4.txt: machinesNum=5 jobsNum=1000"
"***SOLUTION Data from file SOL_U_1_05_1000_4.txt: machinesNum=5 jobsNum=1000 lowerBound=9904 upperBound=9904
isOptimal=1"
Content of machines summed (9904, 9903, 9903, 9903, 9903)
input selected: size 1000 sum 49516

```

----Our Results-----

best from Our local search found:

target function = 9909, num of machines=5

"\n----Comparison for the 104 example----

\*\*\*\*tf from benchmark was 9909(we added the number of machines) and target function from our local search is 9909"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 5))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.259615"

"-----END 105 from 130-----"

"-----START 106 from 130-----"

"input file number 106: inputName=C:/algo/h/docs/benchMark/all/U\_1\_1000\_05\_5.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_1000\_5.txt"

\*\*\*\*Data from file U\_1\_1000\_05\_5.txt: machinesNum=5 jobsNum=1000"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_1000\_5.txt: machinesNum=5 jobsNum=1000 lowerBound=9783 upperBound=9783  
isOptimal=1"

Content of machines summed (9783, 9783, 9782, 9782, 9782)

input selected: size 1000 sum 48912

----Our Results-----

best from Our local search found:

target function = 9788, num of machines=5

"\n----Comparison for the 105 example----

\*\*\*\*tf from benchmark was 9788(we added the number of machines) and target function from our local search is 9788"

\*\*\*RESULT IS THE SAME

Run time: 0.02 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 6))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.257143"

"-----END 106 from 130-----"

"-----START 107 from 130-----"  
"input file number 107: inputName=C:/algo/h/docs/benchMark/all/U\_1\_1000\_05\_6.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_1000\_6.txt"  
"\*\*\*Data from file U\_1\_1000\_05\_6.txt: machinesNum=5 jobsNum=1000"  
"\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_1000\_6.txt: machinesNum=5 jobsNum=1000 lowerBound=10049 upperBound=10049  
isOptimal=1"  
Content of machines summed (10049, 10049, 10048, 10048, 10048)  
input selected: size 1000 sum 50242

----Our Results-----

best from Our local search found:

target function = 10054, num of machines=5

"\n----Comparison for the 106 example----

\*\*\*tf from benchmark was 10054(we added the number of machines) and target function from our local search is 10054"

\*\*\*RESULT IS THE SAME

Run time: 0.014 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 7))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.254717"

"-----END 107 from 130-----"

"-----START 108 from 130-----"

"input file number 108: inputName=C:/algo/h/docs/benchMark/all/U\_1\_1000\_05\_7.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_05\_1000\_7.txt"

\*\*\*Data from file U\_1\_1000\_05\_7.txt: machinesNum=5 jobsNum=1000"

\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_1000\_7.txt: machinesNum=5 jobsNum=1000 lowerBound=9861 upperBound=9861  
isOptimal=1"

Content of machines summed (9861, 9861, 9861, 9861, 9860)

input selected: size 1000 sum 49304

----Our Results-----

best from Our local search found:

target function = 9866, num of machines=5

```

"\n----Comparison for the 107 example----"
"***tf from benchmark was 9866(we added the number of machines) and target function from our local search is 9866"
***RESULT IS THE SAME
Run time: 0.013 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 8))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.252336"
"-----END 108 from 130-----"
"-----START 109 from 130-----"
"input file number 109: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_05_8.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_1000_8.txt"
"***Data from file U_1_1000_05_8.txt: machinesNum=5 jobsNum=1000"
"***SOLUTION Data from file SOL_U_1_05_1000_8.txt: machinesNum=5 jobsNum=1000 lowerBound=10064 upperBound=10064
isOptimal=1"
Content of machines summed (10064, 10064, 10064, 10064, 10064)
input selected: size 1000 sum 50320

----Our Results-----
best from Our local search found:
target function = 10069, num of machines=5
"\n----Comparison for the 108 example----"
"***tf from benchmark was 10069(we added the number of machines) and target function from our local search is 10069"
***RESULT IS THE SAME
Run time: 0.009 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 9))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.25"
"-----END 109 from 130-----"
"-----START 110 from 130-----"
"input file number 110: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_05_9.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_05_1000_9.txt"
"***Data from file U_1_1000_05_9.txt: machinesNum=5 jobsNum=1000"

```

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_05\_1000\_9.txt: machinesNum=5 jobsNum=1000 lowerBound=9827 upperBound=9827  
isOptimal=1"  
Content of machines summed (9827, 9827, 9827, 9826, 9826)  
input selected: size 1000 sum 49133

----Our Results-----

best from Our local search found:

target function = 9832, num of machines=5

"\n----Comparison for the 109 example----

\*\*\*\*tf from benchmark was 9832(we added the number of machines) and target function from our local search is 9832"

\*\*\*RESULT IS THE SAME

Run time: 0.015 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 10))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.247706"

"-----END 110 from 130-----"

"-----START 111 from 130-----"

"input file number 111: inputName=C:/algo/h/docs/benchMark/all/U\_1\_1000\_10\_0.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_1000\_0.txt"

\*\*\*\*Data from file U\_1\_1000\_10\_0.txt: machinesNum=10 jobsNum=1000"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_1000\_0.txt: machinesNum=10 jobsNum=1000 lowerBound=4837 upperBound=4837  
isOptimal=1"

Content of machines summed (4837, 4837, 4837, 4836, 4836, 4836, 4836, 4836, 4836, 4836)

input selected: size 1000 sum 48363

----Our Results-----

best from Our local search found:

target function = 4847, num of machines=10

"\n----Comparison for the 110 example----

\*\*\*\*tf from benchmark was 4847(we added the number of machines) and target function from our local search is 4847"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

```

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 11))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.245455"
"-----END 111 from 130-----"
"-----START 112 from 130-----"
"input file number 112: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_10_1.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_10_1000_1.txt"
"***Data from file U_1_1000_10_1.txt: machinesNum=10 jobsNum=1000"
"***SOLUTION Data from file SOL_U_1_10_1000_1.txt: machinesNum=10 jobsNum=1000 lowerBound=5021 upperBound=5021
isOptimal=1"
Content of machines summed (5021, 5021, 5020, 5020, 5020, 5020, 5020, 5020, 5020, 5020)
input selected: size 1000 sum 50202

----Our Results-----
best from Our local search found:
target function = 5031, num of machines=10
"\n----Comparison for the 111 example----"
"***tf from benchmark was 5031(we added the number of machines) and target function from our local search is 5031"
***RESULT IS THE SAME
Run time: 0.016 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 12))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.243243"
"-----END 112 from 130-----"
"-----START 113 from 130-----"
"input file number 113: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_10_2.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_10_1000_2.txt"
"***Data from file U_1_1000_10_2.txt: machinesNum=10 jobsNum=1000"
"***SOLUTION Data from file SOL_U_1_10_1000_2.txt: machinesNum=10 jobsNum=1000 lowerBound=5110 upperBound=5110
isOptimal=1"
Content of machines summed (5110, 5110, 5110, 5110, 5110, 5110, 5110, 5109, 5109, 5109)
input selected: size 1000 sum 51097

```

----Our Results-----

best from Our local search found:

target function = 5120, num of machines=10

"\n----Comparison for the 112 example----

\*\*\*\*tf from benchmark was 5120(we added the number of machines) and target function from our local search is 5120"

\*\*\*RESULT IS THE SAME

Run time: 0.014 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 13))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.241071"

"-----END 113 from 130-----"

"-----START 114 from 130-----"

"input file number 114: inputName=C:/algo/h/docs/benchMark/all/U\_1\_1000\_10\_3.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_1000\_3.txt"

\*\*\*\*Data from file U\_1\_1000\_10\_3.txt: machinesNum=10 jobsNum=1000"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_1000\_3.txt: machinesNum=10 jobsNum=1000 lowerBound=4926 upperBound=4926  
isOptimal=1"

Content of machines summed (4926, 4926, 4926, 4926, 4926, 4925, 4925, 4925, 4925, 4925)

input selected: size 1000 sum 49255

----Our Results-----

best from Our local search found:

target function = 4936, num of machines=10

"\n----Comparison for the 113 example----

\*\*\*\*tf from benchmark was 4936(we added the number of machines) and target function from our local search is 4936"

\*\*\*RESULT IS THE SAME

Run time: 0.015 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 14))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.238938"

"-----END 114 from 130-----"

```
"-----START 115 from 130-----"

```

----Our Results-----

best from Our local search found:

target function = 5129, num of machines=10

"\n----Comparison for the 114 example----

\*\*\*tf from benchmark was 5129(we added the number of machines) and target function from our local search is 5129"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 15))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.236842"

"-----END 115 from 130-----"

"-----START 116 from 130-----"

"input file number 116: inputName=C:/algo/h/docs/benchMark/all/U\_1\_1000\_10\_5.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_1000\_5.txt"

\*\*\*Data from file U\_1\_1000\_10\_5.txt: machinesNum=10 jobsNum=1000"

\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_1000\_5.txt: machinesNum=10 jobsNum=1000 lowerBound=4885 upperBound=4885  
isOptimal=1"

Content of machines summed (4885, 4885, 4884, 4884, 4884, 4884, 4884, 4884, 4884, 4884)

input selected: size 1000 sum 48842

----Our Results-----

best from Our local search found:

target function = 4895, num of machines=10



```

\n----Comparison for the 115 example----"
****tf from benchmark was 4895(we added the number of machines) and target function from our local search is 4895"
***RESULT IS THE SAME
Run time: 0.015 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 16))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.234783"
"-----END 116 from 130-----"
"-----START 117 from 130-----"
"input file number 117: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_10_6.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_10_1000_6.txt"
****Data from file U_1_1000_10_6.txt: machinesNum=10 jobsNum=1000"
****SOLUTION Data from file SOL_U_1_10_1000_6.txt: machinesNum=10 jobsNum=1000 lowerBound=4954 upperBound=4954
isOptimal=1"
Content of machines summed (4954, 4954, 4954, 4954, 4954, 4954, 4954, 4954, 4954, 4954)
input selected: size 1000 sum 49540

----Our Results-----
best from Our local search found:
target function = 4964, num of machines=10
\n----Comparison for the 116 example----"
****tf from benchmark was 4964(we added the number of machines) and target function from our local search is 4964"
***RESULT IS THE SAME
Run time: 0.016 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 17))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.232759"
"-----END 117 from 130-----"
"-----START 118 from 130-----"
"input file number 118: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_10_7.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_10_1000_7.txt"
****Data from file U_1_1000_10_7.txt: machinesNum=10 jobsNum=1000"

```

\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_1000\_7.txt: machinesNum=10 jobsNum=1000 lowerBound=5153 upperBound=5153  
isOptimal=1"

Content of machines summed (5153, 5153, 5153, 5153, 5152, 5152, 5152, 5152, 5152, 5152)  
input selected: size 1000 sum 51524

----Our Results-----

best from Our local search found:

target function = 5163, num of machines=10

"\n----Comparison for the 117 example----

\*\*\*tf from benchmark was 5163(we added the number of machines) and target function from our local search is 5163"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 18))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.230769"

"-----END 118 from 130-----"

"-----START 119 from 130-----"

"input file number 119: inputName=C:/algo/h/docs/benchMark/all/U\_1\_1000\_10\_8.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_10\_1000\_8.txt"

\*\*\*Data from file U\_1\_1000\_10\_8.txt: machinesNum=10 jobsNum=1000"

\*\*\*SOLUTION Data from file SOL\_U\_1\_10\_1000\_8.txt: machinesNum=10 jobsNum=1000 lowerBound=4855 upperBound=4855  
isOptimal=1"

Content of machines summed (4855, 4855, 4855, 4855, 4855, 4855, 4854, 4854, 4854, 4854)  
input selected: size 1000 sum 48546

----Our Results-----

best from Our local search found:

target function = 4865, num of machines=10

"\n----Comparison for the 118 example----

\*\*\*tf from benchmark was 4865(we added the number of machines) and target function from our local search is 4865"

\*\*\*RESULT IS THE SAME

Run time: 0.015 seconds

```
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 19))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.228814"
"-----END 119 from 130-----"
"-----START 120 from 130-----"
"input file number 120: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_10_9.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_10_1000_9.txt"
"***Data from file U_1_1000_10_9.txt: machinesNum=10 jobsNum=1000"
"***SOLUTION Data from file SOL_U_1_10_1000_9.txt: machinesNum=10 jobsNum=1000 lowerBound=4886 upperBound=4886
isOptimal=1"
Content of machines summed (4886, 4886, 4886, 4886, 4886, 4886, 4886, 4886, 4885, 4885)
input selected: size 1000 sum 48858
```

----Our Results-----

best from Our local search found:

target function = 4896, num of machines=10

"\n----Comparison for the 119 example----

\*\*\*tf from benchmark was 4896(we added the number of machines) and target function from our local search is 4896"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

```
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 20))
```

```
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
```

```
"Avegare error: 0.226891"
```

```
"-----END 120 from 130-----"
```

```
"-----START 121 from 130-----"
```

```
"input file number 121: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_25_0.txt and
```

```
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_1000_0.txt"
```

```
***Data from file U_1_1000_25_0.txt: machinesNum=25 jobsNum=1000"
```

```
***SOLUTION Data from file SOL_U_1_25_1000_0.txt: machinesNum=25 jobsNum=1000 lowerBound=2025 upperBound=2025
```

```
isOptimal=1"
```

```
Content of machines summed (2025, 2025, 2025, 2025, 2025, 2025, 2025, 2025, 2025, 2025, 2025, 2025, 2025, 2025, 2024, 2024, 2025, 2025, 2024, 2024,
2024, 2024, 2024, 2024, 2024, 2024, 2024, 2024)
```

input selected: size 1000 sum 50614

----Our Results-----

best from Our local search found:

target function = 2050, num of machines=25

"\n----Comparison for the 120 example----

\*\*\*\*tf from benchmark was 2050(we added the number of machines) and target function from our local search is 2050"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 21))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.225"

"-----END 121 from 130-----"

"-----START 122 from 130-----"

"input file number 122: inputName=C:/algo/h/docs/benchMark/all/U\_1\_1000\_25\_1.txt and

solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_1000\_1.txt"

\*\*\*\*Data from file U\_1\_1000\_25\_1.txt: machinesNum=25 jobsNum=1000"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_1000\_1.txt: machinesNum=25 jobsNum=1000 lowerBound=1931 upperBound=1931

isOptimal=1"

Content of machines summed (1931, 1930, 1930, 1930, 1930)

input selected: size 1000 sum 48271

----Our Results-----

best from Our local search found:

target function = 1956, num of machines=25

"\n----Comparison for the 121 example----

\*\*\*\*tf from benchmark was 1956(we added the number of machines) and target function from our local search is 1956"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 22))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

```

"Avegare error: 0.22314"
"-----END 122 from 130-----"
"-----START 123 from 130-----"
"input file number 123: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_25_2.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_1000_2.txt"
"***Data from file U_1_1000_25_2.txt: machinesNum=25 jobsNum=1000"
"***SOLUTION Data from file SOL_U_1_25_1000_2.txt: machinesNum=25 jobsNum=1000 lowerBound=2027 upperBound=2027
isOptimal=1"
Content of machines summed (2027, 2027, 2027, 2027, 2027, 2027, 2026, 2026, 2026, 2027, 2026, 2026, 2026, 2026, 2026, 2026, 2025,
2025, 2025, 2025, 2025, 2026, 2026)
input selected: size 1000 sum 50651

----Our Results-----
best from Our local search found:
target function = 2052, num of machines=25
"\n----Comparison for the 122 example----"
"***tf from benchmark was 2052(we added the number of machines) and target function from our local search is 2052"
***RESULT IS THE SAME
Run time: 0.016 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 23))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.221311"
"-----END 123 from 130-----"
"-----START 124 from 130-----"
"input file number 124: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_25_3.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_1000_3.txt"
"***Data from file U_1_1000_25_3.txt: machinesNum=25 jobsNum=1000"
"***SOLUTION Data from file SOL_U_1_25_1000_3.txt: machinesNum=25 jobsNum=1000 lowerBound=2024 upperBound=2024
isOptimal=1"
Content of machines summed (2024, 2023, 2023, 2023, 2023, 2023, 2024, 2024, 2024, 2023, 2023, 2023, 2023, 2023, 2023, 2023, 2023, 2023,
2022, 2024, 2024, 2024, 2024, 2023, 2023)
input selected: size 1000 sum 50582

```

"Avegare error: 0.217742"

```

"-----END 125 from 130-----"
"-----START 126 from 130-----"
"input file number 126: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_25_5.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_1000_5.txt"
"***Data from file U_1_1000_25_5.txt: machinesNum=25 jobsNum=1000"
"***SOLUTION Data from file SOL_U_1_25_1000_5.txt: machinesNum=25 jobsNum=1000 lowerBound=1959 upperBound=1959
isOptimal=1"
Content of machines summed (1958, 1958, 1958, 1958, 1958, 1958, 1958, 1959, 1959, 1959, 1959, 1959, 1959, 1959, 1958, 1958, 1958, 1958,
1958, 1958, 1958, 1958, 1959, 1959)
input selected: size 1000 sum 48959

----Our Results-----
best from Our local search found:
target function = 1984, num of machines=25
"\n----Comparison for the 125 example----"
"***tf from benchmark was 1984(we added the number of machines) and target function from our local search is 1984"
***RESULT IS THE SAME
Run time: 0.028 seconds
"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 26))
"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))
"Avegare error: 0.216"
"-----END 126 from 130-----"
"-----START 127 from 130-----"
"input file number 127: inputName=C:/algo/h/docs/benchMark/all/U_1_1000_25_6.txt and
solutionName=C:/algo/h/docs/benchMark/all/SOL_U_1_25_1000_6.txt"
"***Data from file U_1_1000_25_6.txt: machinesNum=25 jobsNum=1000"
"***SOLUTION Data from file SOL_U_1_25_1000_6.txt: machinesNum=25 jobsNum=1000 lowerBound=2033 upperBound=2033
isOptimal=1"
Content of machines summed (2033, 2033, 2033, 2033, 2033, 2033, 2033, 2033, 2033, 2033, 2033, 2033, 2032, 2032, 2032, 2032, 2032, 2032,
2032, 2032, 2032, 2032, 2032, 2032)
input selected: size 1000 sum 50812

```

----Our Results-----

best from Our local search found:

target function = 2058, num of machines=25

"\n----Comparison for the 126 example----

\*\*\*\*tf from benchmark was 2058(we added the number of machines) and target function from our local search is 2058"

\*\*\*RESULT IS THE SAME

Run time: 0.022 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 27))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.214286"

"-----END 127 from 130-----"

"-----START 128 from 130-----"

"input file number 128: inputName=C:/algo/h/docs/benchMark/all/U\_1\_1000\_25\_7.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_1000\_7.txt"

\*\*\*\*Data from file U\_1\_1000\_25\_7.txt: machinesNum=25 jobsNum=1000"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_1000\_7.txt: machinesNum=25 jobsNum=1000 lowerBound=1966 upperBound=1966  
isOptimal=1"

Content of machines summed (1966, 1966, 1966, 1966, 1966, 1966, 1966, 1965, 1965, 1965, 1965, 1965, 1965, 1965, 1965, 1965, 1965, 1965, 1965, 1965,  
1965, 1965, 1965, 1965, 1965, 1965, 1965)

input selected: size 1000 sum 49132

----Our Results-----

best from Our local search found:

target function = 1991, num of machines=25

"\n----Comparison for the 127 example----

\*\*\*\*tf from benchmark was 1991(we added the number of machines) and target function from our local search is 1991"

\*\*\*RESULT IS THE SAME

Run time: 0.031 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 28))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.212598"

"-----END 128 from 130-----"



"-----START 129 from 130-----"

"input file number 129: inputName=C:/algo/h/docs/benchMark/all/U\_1\_1000\_25\_8.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_1000\_8.txt"

\*\*\*\*Data from file U\_1\_1000\_25\_8.txt: machinesNum=25 jobsNum=1000"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_1000\_8.txt: machinesNum=25 jobsNum=1000 lowerBound=2025 upperBound=2025  
isOptimal=1"

Content of machines summed (2024, 2024, 2024, 2024, 2025, 2025, 2025, 2025, 2024, 2024, 2024, 2024, 2024, 2024, 2024, 2024, 2024, 2024, 2024, 2024,  
2024, 2024, 2024, 2024, 2024, 2023, 2023)

input selected: size 1000 sum 50602

----Our Results-----

best from Our local search found:

target function = 2050, num of machines=25

"\n----Comparison for the 128 example----"

\*\*\*\*tf from benchmark was 2050(we added the number of machines) and target function from our local search is 2050"

\*\*\*RESULT IS THE SAME

Run time: 0.031 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 29))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.210938"

"-----END 129 from 130-----"

"-----START 130 from 130-----"

"input file number 130: inputName=C:/algo/h/docs/benchMark/all/U\_1\_1000\_25\_9.txt and  
solutionName=C:/algo/h/docs/benchMark/all/SOL\_U\_1\_25\_1000\_9.txt"

\*\*\*\*Data from file U\_1\_1000\_25\_9.txt: machinesNum=25 jobsNum=1000"

\*\*\*\*SOLUTION Data from file SOL\_U\_1\_25\_1000\_9.txt: machinesNum=25 jobsNum=1000 lowerBound=2048 upperBound=2048  
isOptimal=1"

Content of machines summed (2048, 2048, 2048, 2048, 2048, 2048, 2048, 2048, 2048, 2048, 2047, 2047, 2047, 2047, 2047, 2047, 2047, 2047, 2047, 2047,  
2047, 2047, 2047, 2047, 2047, 2047, 2047)

input selected: size 1000 sum 51185

----Our Results-----

best from Our local search found:

target function = 2073, num of machines=25

"\n---Comparison for the 129 example---"

\*\*\*tf from benchmark was 2073(we added the number of machines) and target function from our local search is 2073"

\*\*\*RESULT IS THE SAME

Run time: 0.016 seconds

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 30))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Avegare error: 0.209302"

"-----END 130 from 130-----"

"Correct (size-numberCorrect):" QMap((10, 9)(50, 20)(100, 24)(500, 30)(1000, 30))

"Mistakes(size-numberMistakes):" QMap((10, 1)(50, 10)(100, 6))

"Total Avegare error: 0.207692"

**C:\algo\build-h-Desktop\_Qt\_5\_6\_0\_MinGW\_32bit-Debug\debug\h.exe exited with code 0**