

Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Test Analyze Window Help

Speedup20250917 (Global Scope) main(int argc, char * argv[])

```
double TinhS(double P)
{
    double S = 1.0 - P;
    return S;
}
double TinhP(double S)
{
    double P = 1.0 - S;
    return P;
}
double TinhSpeedupSN(double S, int N)
{
    double Speedup = 0.0;
    if ((S >= 0.0) && (S <= 1.0) && (N > 0))
    {
        Speedup = 1.0 / (S + (1.0 - S) / N); // Cong thuc Amdahl
    }
    return Speedup;
```

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Speedup20250917 - Microsoft Visual Studio

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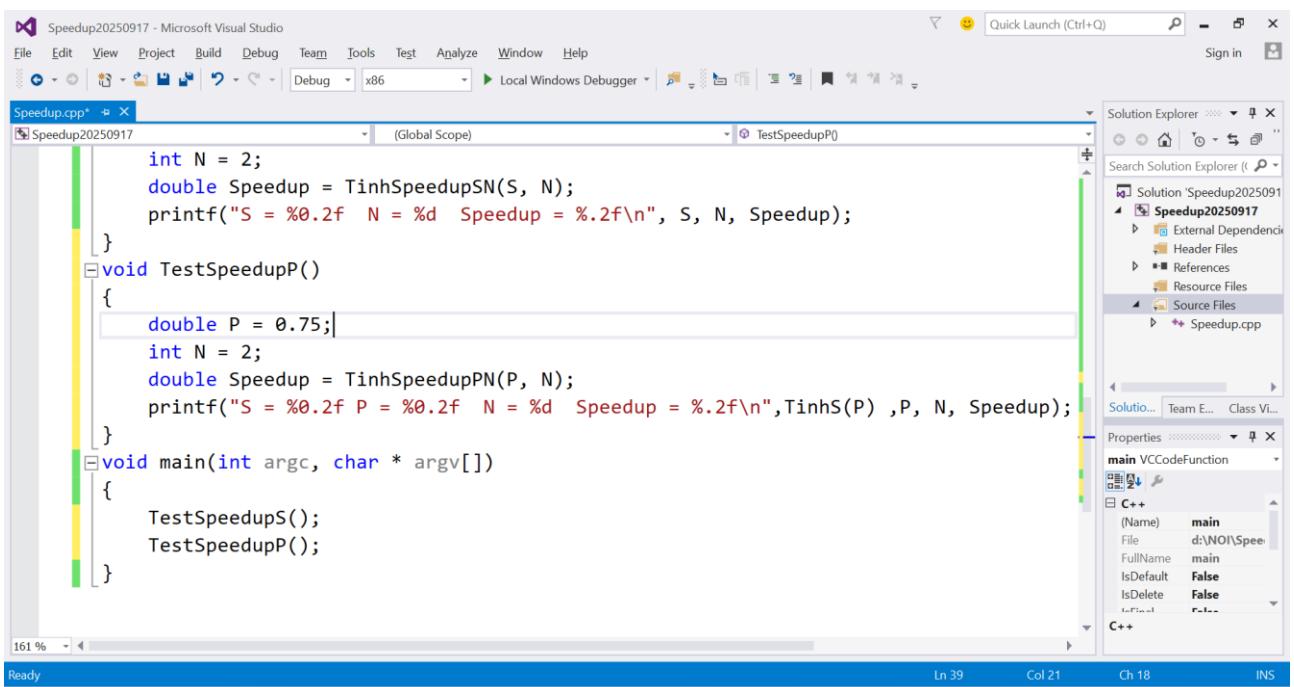
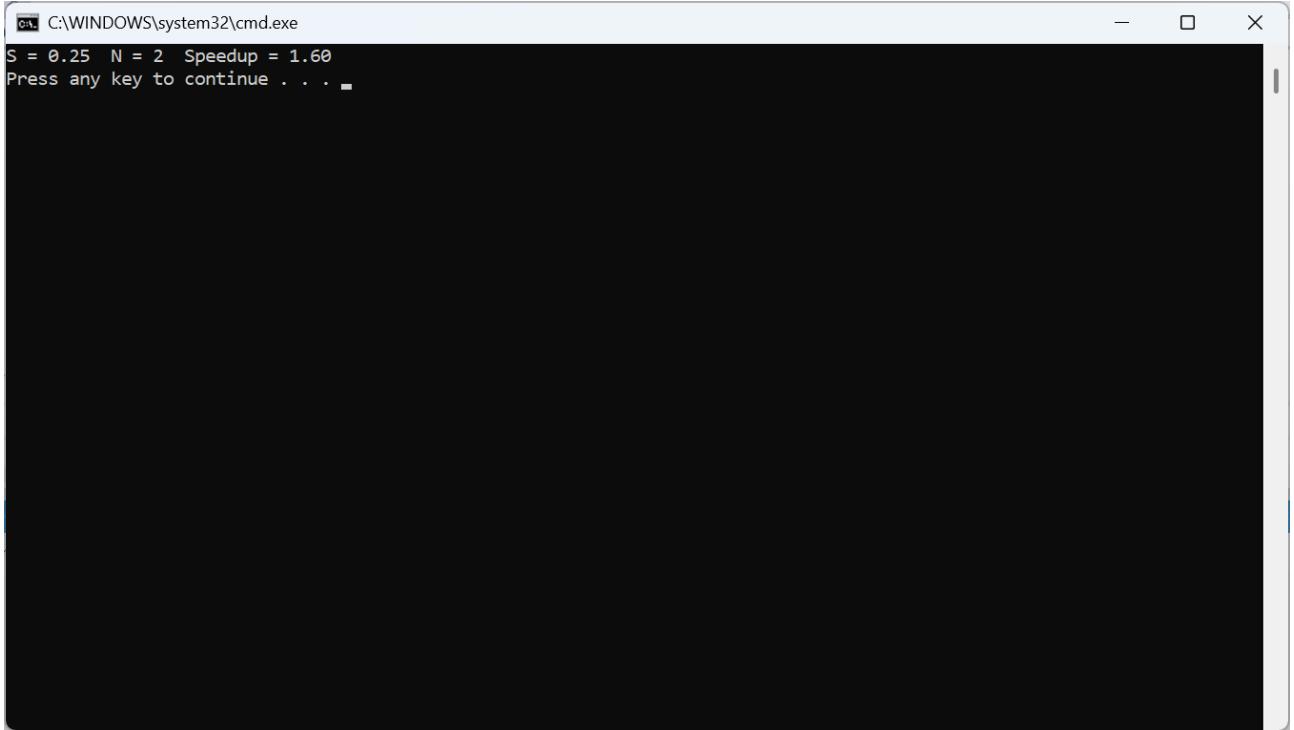
Speedup20250917 (Global Scope) main(int argc, char * argv[])

```
double TinhSpeedupPN(double P, int N)
{
    double Speedup = 0.0;
    double S = TinhS(P);
    Speedup = TinhSpeedupSN(S, N);
    return Speedup;
}

void TestSpeedup()
{
    double S = 0.25;
    int N = 2;
    double Speedup = TinhSpeedupSN(S, N);
    printf("S = %.2f  N = %d  Speedup = %.2f\n", S, N, Speedup);
}

void main(int argc, char * argv[])
{
    TestSpeedup();
```

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```
C:\WINDOWS\system32\cmd.exe
S = 0.25 N = 2 Speedup = 1.60
S = 0.25 P = 0.75 N = 2 Speedup = 1.60
Press any key to continue . . .
```

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Speedup20250917 Solution Explorer Properties TangSoCore

Speedup.cpp

```
#include <stdio.h>
#include <math.h>

double TinhSFromSpeedUp(double Speedup, int NumCore)
{
    double S = 0.0;
    int N = NumCore;
    S = (N - Speedup) / (Speedup*(N - 1.0)); // Cong thuc amdahl
    return S;
}

int TangSoCore(double CurrentSpeedup, int NumCore, int ntime) { ... }

void TestSpeedupS() { ... }
void TestSpeedupP() { ... }

void TestTinhSFromSpeedUp()
{
    double Speedup = 1.6;
    int N = 2;
    double S = TinhSFromSpeedUp(Speedup, N);
    printf("S = %0.2f \n", S);
}

void main(int argc, char * argv[])
{
}
```

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Solution 'Speedup20250917'
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TangSoCore VCCodeFunction
C++
(Name) TangSoCore
File d:\NOI\Spec
FullName TangSoCore
IsDefault False
IsDelete False
IsFinal False

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Microsoft Visual Studio - Speedup20250917

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Speedup.cpp (Global Scope) TestTinhSFromSpeedUp()

```
int TangSoCore(double CurrentSpeedup, int NumCore, int ntime)
{
    if (ntime <= 0)
        return 0;
    double S = TinhSFromSpeedUp(CurrentSpeedup, NumCore);
    double LimitSpeedup = CurrentSpeedup * ntime;
    int i = NumCore;
    double Speedup = CurrentSpeedup;
    while (Speedup < LimitSpeedup)
    {
        i++;
        Speedup = TinhSpeedupSN(S, i);
    }
    return i - NumCore;
}
void TestSpeedupS() { ... }
void TestSpeedupP() { ... }
void TestTinhSFromSpeedUp()
```

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Properties
Team E... Class Vi...
TestTinhSFromSpeedUp VCC
C++ (Name) TestTinhSFromSpeedUp File d:\NOI\Spec... FullName TestTinhSFromSpeedUp IsDefault False IsDelete False

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Microsoft Visual Studio - Speedup20250917

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Speedup.cpp (Global Scope) TestTinhSFromSpeedUp()

```
void TestSpeedupP() { ... }
void TestTinhSFromSpeedUp()
{
    double Speedup = 1.6;
    int N = 2;
    double S = TinhSFromSpeedUp(Speedup, N);
    printf("S = %0.2f \n", S);
    int ntime = 2;
    int SoCoreTang = TangSoCore(Speedup, N, ntime);
    printf("So core tang them = %d\n", SoCoreTang);
    double NewSpeedup = TinhSpeedupSN(S, N + SoCoreTang);
    printf("OldSpeedup = %0.2f NewSpeedup = %0.2f\n", Speedup, NewSpeedup);
}

void main(int argc, char * argv[])
{
    TestTinhSFromSpeedUp();
}
```

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Solution 'Speedup20250917'
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Properties
Team E... Class Vi...
TestTinhSFromSpeedUp VCC
C++ (Name) TestTinhSFromSpeedUp File d:\NOI\Spec... FullName TestTinhSFromSpeedUp IsDefault False IsDelete False

Ready Ln 77 Col 2 Ch 2 INS

```
C:\WINDOWS\system32\cmd.exe
S = 0.25
So core tang them = 10
OldSpeedup = 1.60 NewSpeedup = 3.20
Press any key to continue . . .
```

Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Test Analyze Window Help

Speedup.cpp

```
void TestSpeedupS() { ... }
void TestSpeedupP() { ... }
void TestTinhSFromSpeedUp() { ... }
// SP GiaTri SoCoreN Solantang
typedef struct _data_t
{
    char SP;
    double giatri;
    int SoCoreN;
    int Solantang;
    double S;
    double P;
    double Speedup;
    int SoCoreTang;
    double NewSpeedup;
} data_t, * pdata_t;
bool DocTapTin(char * filename, data_t p[], int n)
```

Solution Explorer

Search Solution Explorer (F1)

Solution 'Speedup20250917'

- Speedup20250917
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 - Resource Files
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 - Speedup.cpp

Properties

DocTapTin VCCodeFunction

C++	(Name) DocTapTin
File	d:\NOI\Speedup20250917\Speedup.cpp
FullName	DocTapTin
IsDefault	False
IsDelete	False
IsUnicode	False

Ready

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Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Speedup20250917

Speedup.cpp (Global Scope)

```
void main(int argc, char * argv[])
{
    //tham so : ten tap tin, so phan tu tap tin
    //Speedup20250917.exe d:\Speedup.txt 200
    if (argc < 3)
        printf("%s filename sphantu\n", argv[0]), exit(0);
    int SoPhanTuMang = atoi(argv[2]);
    if (SoPhanTuMang<=0)
        printf("So phan tu la so am\n"), exit(0);
    pdata_t pdata = (pdata_t)malloc(SoPhanTuMang * sizeof(data_t));
    if (!pdata)
        printf("Khong cap phat duoc bo nho\n"), exit(0);

    DocTapTin(argv[1],pdata, SoPhanTuMang);

}
```

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Solution Explorer

Search Solution Explorer (F1)

Solution 'Speedup20250917'

Speedup20250917

- External Dependencies
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- Speedup.cpp

Properties

DocTapTin VCCodeFunction

C++

(Name)	DocTapTin
File	d:\NOI\Speedup20250917\Speedup.cpp
FullName	DocTapTin
IsDefault	False
IsDelete	False
LastSaved	-----

Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Speedup20250917

Speedup.cpp (Global Scope)

```
bool DocTapTin(char * filename, data_t p[], int n)
{
    FILE * f = fopen(filename, "rt");
    if (!f)
        printf("Khong the mo tap tin %s\n", filename), exit(0);
    char header[_MAX_PATH];
    fgets(header, _MAX_PATH, f);
    int i = 0;
    printf(header);
    while ((!feof(f)) && (i < n))
    {
        fscanf(f, "%c%lf%d",
               &(p[i].SP), &(p[i].giatri), &(p[i].SoCoreN), &(p[i].SoCoreTang));
        fgets(header, _MAX_PATH, f);
        printf("%2d %c %0.2lf %3d %3d\n", i,
               p[i].SP, p[i].giatri, p[i].SoCoreN, p[i].SoCoreTang);
        i++;
    }
    fclose(f);
    return true;
}
```

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Solution Explorer

Search Solution Explorer (F1)

Solution 'Speedup20250917'

Speedup20250917

- External Dependencies
- Header Files
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- Speedup.cpp

Properties

DocTapTin VCCodeFunction

C++

(Name)	DocTapTin
File	d:\NOI\Speedup20250917\Speedup.cpp
FullName	DocTapTin
IsDefault	False
IsDelete	False
LastSaved	-----

The screenshot shows the Microsoft Visual Studio interface with the following details:

- Solution Explorer:** Shows the project "Speedup20250917" with its files: External Dependencies, Header Files, References, Resource Files, Source Files, and the source file "Speedup.cpp".
- Properties Window:** Displays properties for the "TinhSpeedupData" function, including Name: TinhSpeedupData, File: Speedup.cpp, FullName: d:\NOI\Speedup\Speedup.cpp, IsDefault: False, IsDelete: False, and IsFinal: False.
- Code Editor:** The "Speedup.cpp" file is open, showing C++ code. The code includes functions like "TinhSpeedupData" and "TinhSpeedupMangData". A specific line of code is highlighted: "p->P = TinhP(p->S);".
- Status Bar:** Shows "Ready", "Ln 117", "Col 26", "Ch 20", and "INS".

The screenshot shows a Windows Command Prompt window with the following details:

- Title Bar:** Select C:\Windows\System32\cmd.exe
- Version Information:** Microsoft Windows [Version 10.0.26100.3194]
(c) Microsoft Corporation. All rights reserved.
- Command Line:** D:\NOI\Speedup20250917\Debug>Speedup20250917.exe d:\Speedup.txt 20
- Output:** The output lists 20 rows of data, each containing four values: SP, GiaTri, SoCoreN, and Solantang. The data is as follows:

SP	GiaTri	SoCoreN	Solantang
0 S 0.25	2	2	
1 P 0.75	2	2	
2 P 0.40	8	2	
3 P 0.40	16	2	
4 P 0.67	2	2	
5 P 0.67	4	2	
6 P 0.90	2	2	
7 P 0.90	4	2	
8 P 0.36	1	2	
9 P 0.82	12	2	
10 S 0.33	3	2	
11 S 0.73	5	2	
12 P 0.58	14	2	
13 P 0.21	4	2	
14 S 0.49	11	2	
15 P 0.43	2	2	
16 P 0.75	5	2	
17 S 0.55	2	2	
18 P 0.19	3	2	
19 P 0.64	10	2	

D:\NOI\Speedup20250917\Debug>

Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Test Analyze Window Help

Speedup20250917 (Global Scope) TinhSpeedupData(pdata_t p)

```
void TinhSpeedupData(pdata_t p)
{
    if (p->SP == 'S')
    {
        p->S = p->giatri;
        p->P = TinhP(p->S);
    }
    else
    {
        p->P = p->giatri;
        p->S = TinhS(p->P);
    }
    p->Speedup = TinhSpeedupSN(p->S, p->SoCoreN);
    p->SoCoreTang = TangSoCore(p->Speedup, p->SoCoreN, p->Solantang);
    p->NewSpeedup = TinhSpeedupSN(p->S, p->SoCoreN + p->SoCoreTang);
}
void TinhSpeedupMangData(pdata_t p, int n)
{
    for (int i = 0; i < n; i++)
        TinhSpeedupData(p + i);
}
```

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Speedup20250917 - Microsoft Visual Studio

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Speedup20250917 (Global Scope) TinhSpeedupData(pdata_t p)

```
p->NewSpeedup = TinhSpeedupSN(p->S, p->SoCoreN + p->SoCoreTang);
}
void TinhSpeedupMangData(pdata_t p, int n)
{
    for (int i = 0; i < n; i++)
        TinhSpeedupData(p + i);
}
void XuatData(pdata_t p, int n)
{
    printf("TT,SP,giatri,SoCoreN,Solantang,S, P, Speedup, SoCoreTang, NewSpeedup\n");
    for (int i = 0; i < n; i++)
    {
        printf("%3d, %c , %0.2lf , %3d, %3d ,", i,
               p[i].SP, p[i].giatri, p[i].SoCoreN, p[i].Solantang);

        printf("%0.2lf, %0.2lf, %4.2lf, %3d, %4.2lf \n",
               p[i].S, p[i].P, p[i].Speedup, p[i].SoCoreTang, p[i].NewSpeedup);
    }
}
```

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Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Speedup20250917 (Global Scope) TinhSpeedupData(pdata_t p)

```
Speedup20250917.cpp
}
void main(int argc, char * argv[])
{
    //tham so : ten tap tin, so phan tu tap tin
    //Speedup20250917.exe d:\Speedup.txt 200
    if (argc < 3)
        printf("%s filename sophantu\n", argv[0]), exit(0);
    int SoPhanTuMang = atoi(argv[2]);
    if (SoPhanTuMang<=0)
        printf("So phan tu la so am\n"), exit(0);
    pdata_t pdata = (pdata_t)malloc(SoPhanTuMang * sizeof(data_t));
    if (!pdata)
        printf("Khong cap phat duoc bo nho\n"), exit(0);

    DocTapTin(argv[1],pdata, SoPhanTuMang);
    TinhSpeedupMangData(pdata, SoPhanTuMang);
    XuatData(pdata, SoPhanTuMang);
}
```

Solution Explorer
Solution 'Speedup20250917'
Speedup20250917
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Speedup.cpp

Properties
C++
(Name) TinhSpeedup
File d:\NOI\Speedup20250917\Speedup.cpp
FullName TinhSpeedup
IsDefault False
IsDelete False
IsUnicode False
C++

C:\Windows\System32\cmd.exe

```
13 P 0.21 4 2
14 S 0.49 11 2
15 P 0.43 2 2
16 P 0.75 5 2
17 S 0.55 2 2
18 P 0.19 3 2
19 P 0.64 10 2
TT,SP,giatri,SoCoreN,Solantang,S, P, Speedup, SoCoreTang, NewSpeedup
  0, S , 0.25 , 2 , 2 ,0.25, 0.75, 1.60, 10, 3.20
  1, P , 0.75 , 2 , 2 ,0.25, 0.75, 1.60, 10, 3.20
  2, P , 0.40 , 8 , 2 ,0.60, 0.40, 1.54, 93, 1.66
  3, P , 0.40 , 16 , 2 ,0.60, 0.40, 1.60, 85, 1.66
  4, P , 0.67 , 2 , 2 ,0.33, 0.67, 1.50, 99, 2.97
  5, P , 0.67 , 4 , 2 ,0.33, 0.67, 2.01, 97, 2.97
  6, P , 0.90 , 2 , 2 ,0.10, 0.90, 1.82, 4, 4.00
  7, P , 0.90 , 4 , 2 ,0.10, 0.90, 3.08, 11, 6.25
  8, P , 0.36 , 1 , 2 ,0.64, 0.36, 1.00, 100, 1.55
  9, P , 0.82 , 12 , 2 ,0.18, 0.82, 4.03, 89, 5.32
 10, S , 0.33 , 3 , 2 ,0.33, 0.67, 1.81, 98, 2.97
 11, S , 0.73 , 5 , 2 ,0.73, 0.27, 1.28, 96, 1.36
 12, P , 0.58 , 14 , 2 ,0.42, 0.58, 2.17, 87, 2.35
 13, P , 0.21 , 4 , 2 ,0.79, 0.21, 1.19, 97, 1.26
 14, S , 0.49 , 11 , 2 ,0.49, 0.51, 1.86, 90, 2.02
 15, P , 0.43 , 2 , 2 ,0.57, 0.43, 1.27, 99, 1.74
 16, P , 0.75 , 5 , 2 ,0.25, 0.75, 2.50, 96, 3.88
 17, S 0.55 , 2 , 2 ,0.55, 0.45, 1.29, 99, 1.80
 18, P , 0.19 , 3 , 2 ,0.81, 0.19, 1.15, 98, 1.23
 19, P , 0.64 , 10 , 2 ,0.36, 0.64, 2.36, 91, 2.73
```

d:\NOI\Speedup20250917\Debug>

Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Speedup20250917 (Global Scope) main(int argc, char * argv[])

```
void XuatDataTapTin(char * filename, pdata_t p, int n)
{
    FILE * f = fopen(filename, "wt");
    if (!f)
        printf("Khong the tao file %s\n", filename), exit(0);

    fprintf(f, "TT,SP,giatri,SoCoreN,Solantang,S, P, Speedup, SoCoreTang, NewSpeedup\n");
    for (int i = 0; i < n; i++)
    {
        fprintf(f, "%3d, %c , %0.2lf , %3d , %3d ,", i,
                p[i].SP, p[i].giatri, p[i].SoCoreN, p[i].Solantang);

        fprintf(f, "%0.2lf, %0.2lf, %4.2lf, %3d, %4.2lf \n",
                p[i].S, p[i].P, p[i].Speedup, p[i].SoCoreTang, p[i].NewSpeedup);
    }
}

void main(int argc, char * argv[])
{
}
```

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Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Speedup20250917 (Global Scope) main(int argc, char * argv[])

```
void main(int argc, char * argv[])
{
    //tham so : ten tap tin, so phan tu tap tin
    //Speedup20250917.exe d:\Speedup.txt 200 filenameout.csv
    if (argc < 4)
        printf("%s filename sophantu\n", argv[0]), exit(0);
    int SoPhanTuMang = atoi(argv[2]);
    if (SoPhanTuMang<0)
        printf("So phan tu la so am\n"), exit(0);
    pdata_t pdata = (pdata_t)malloc(SoPhanTuMang *sizeof(data_t));
    if (!pdata)
        printf("Khong cap phat duoc bo nho\n"), exit(0);

    DocTapTin(argv[1],pdata, SoPhanTuMang);
    TinhSpeedupMangData(pdata, SoPhanTuMang);
    XuatData(pdata, SoPhanTuMang);
    XuatDataTapTin(argv[3], pdata, SoPhanTuMang);
}
```

Ready Ln 180 Col 5 Ch 5 INS

```
C:\Windows\System32\cmd.exe
19, P , 0.64 , 10 , 2 ,0.36, 0.64, 2.36, 91, 2.73
d:\NOI\Speedup20250917\Debug>Speedup20250917.exe d:\Speedup.txt 20 d:\Speedup.txt.csv
```

New Volume (D:)			
		Search New Volume (D:)	
		Details	
Name	Date modified	Type	Size
SHAREB514	5/19/2025 11:10 AM	File folder	
JPG File			
CA_2.jpg	8/10/2025 8:24 AM	JPG File	187 KB
Microsoft Excel 97-2003 Worksheet			
1003K01KTC01PTTNPM.xls	6/12/2025 10:23 AM	Microsoft Excel 97...	58 KB
1002K01KTC01PTTNPM.xls	6/12/2025 9:44 AM	Microsoft Excel 97...	57 KB
Microsoft Excel Comma Separated Values File			
Speedup.txt.csv	9/17/2025 10:39 AM	Microsoft Excel Co...	2 KB
Microsoft Word Document			
Huong dan SD PM.docx	11/13/2020 2:54 PM	Microsoft Word D...	305 KB
Text Document			
Speedup.txt	9/17/2025 7:40 AM	Text Document	3 KB
Windows Batch File			
XOA.D.BAT	11/10/2024 7:27 AM	Windows Batch File	1 KB
WinRAR archive			
NEW_10.08.2025.rar	8/10/2025 12:03 PM	WinRAR archive	2,715 KB
Tracking.rar	6/11/2025 3:31 PM	WinRAR archive	15,267 KB
PM_B514_TCN_LTDD.rar	6/10/2025 11:31 AM	WinRAR archive	166,063 KB

TT	SP	giatri	SoCoreN	Solantang	S	P	Speedup	SoCoreTang	NewSpeedup
2	0 S	0.25	2	2	0.25	0.75	1.6	10	3.2
3	1 P	0.75	2	2	0.25	0.75	1.6	10	3.2
4	2 P	0.4	8	2	0.6	0.4	1.54	93	1.66
5	3 P	0.4	16	2	0.6	0.4	1.6	85	1.66
6	4 P	0.67	2	2	0.33	0.67	1.5	99	2.97
7	5 P	0.67	4	2	0.33	0.67	2.01	97	2.97
8	6 P	0.9	2	2	0.1	0.9	1.82	4	4
9	7 P	0.9	4	2	0.1	0.9	3.08	11	6.25
10	8 P	0.36	1	2	0.64	0.36	1	100	1.55
11	9 P	0.82	12	2	0.18	0.82	4.03	89	5.32
12	10 S	0.33	3	2	0.33	0.67	1.81	98	2.97
13	11 S	0.73	5	2	0.73	0.27	1.28	96	1.36
14	12 P	0.58	14	2	0.42	0.58	2.17	87	2.35
15	13 P	0.21	4	2	0.79	0.21	1.19	97	1.26
16	14 S	0.49	11	2	0.49	0.51	1.86	90	2.02
17	15 P	0.43	2	2	0.57	0.43	1.27	99	1.74
18	16 P	0.75	5	2	0.25	0.75	2.5	96	3.88
19	17 S	0.55	2	2	0.55	0.45	1.29	99	1.8
20	18 P	0.19	3	2	0.81	0.19	1.15	98	1.23

CreateProcess để chạy Excel mở tập tin:\

```

bool OpenExcel(char * filename)
{
    STARTUPINFO si;
    PROCESS_INFORMATION pi;
    ZeroMemory(&si, sizeof(si));
    si.cb = sizeof(si);
    ZeroMemory(&pi, sizeof(pi));
    char cmdline[_MAX_PATH] = "C:\\Program Files\\Microsoft Office\\root\\Office16\\EXCEL.EXE ";
    strcat(cmdline, filename);
    if (!CreateProcess(NULL, // No module name (use command line)
                      cmdline, // Command line
                      NULL, // Process handle not inheritable
                      NULL, // Thread handle not inheritable
                      FALSE, // Set handle inheritance to FALSE
                      0, // No creation flags
                      NULL, // Use parent's environment block
                      NULL, // Use parent's starting directory
                      &si, // Pointer to STARTUPINFO structure
                      &pi) // Pointer to PROCESS_INFORMATION structure
    )
    {
        printf("CreateProcess failed (%d).\n", GetLastError());
        return false;
    }
    CloseHandle(pi.hProcess);
    CloseHandle(pi.hThread);
    return true;
}

```

```

void main(int argc, char * argv[])
{
    //tham so : ten tap tin, so phan tu tap tin
    //Speedup20250917.exe d:\Speedup.txt 200 filenameout.csv
    if (argc < 4)
        printf("%s filename sophantu filenameout.csv\n", argv[0]), exit(0);

    int SoPhanTuMang = atoi(argv[2]);
    if (SoPhanTuMang<=0)
        printf("So phan tu la so am\n"), exit(0);
    pdata_t pdata = (pdata_t)malloc(SoPhanTuMang *sizeof(data_t));
    if (!pdata)
        printf("Khong cap phat duoc bo nho\n"), exit(0);

    DocTapTin(argv[1],pdata, SoPhanTuMang);
    TinhSpeedupMangData(pdata, SoPhanTuMang);
    XuatData(pdata, SoPhanTuMang);
    XuatDataTapTin(argv[3], pdata, SoPhanTuMang);
    OpenExcel(argv[3]);
}

```

```

Select C:\Windows\System32\cmd.exe
d:\NOI\Speedup20250917\Debug>Speedup20250917.exe d:\Speedup.txt 20 d:\Speedup.txt.csv
SP GiaTri SoCoreN Solantang
0 S 0.25 2 2
1 P 0.75 2 2
2 P 0.40 8 2
3 P 0.40 16 2
4 P 0.67 2 2
5 P 0.67 4 2
6 P 0.90 2 2
7 P 0.90 4 2
8 P 0.36 1 2
9 P 0.82 12 2
10 S 0.33 3 2
11 S 0.73 5 2
12 P 0.58 14 2
13 P 0.21 4 2
14 S 0.49 11 2
15 P 0.43 2 2
16 P 0.75 5 2
17 S 0.55 2 2
18 P 0.19 3 2
19 P 0.64 10 2
TT,SP,giatri,SoCoreN,Solantang,S, P, Speedup, SoCoreTang, NewSpeedup
0, S , 0.25 , 2 , 2 ,0.25, 0.75, 1.60, 10, 3.20
1, P , 0.75 , 2 , 2 ,0.25, 0.75, 1.60, 10, 3.20
2, P , 0.40 , 8 , 2 ,0.60, 0.40, 1.54, 93, 1.66
3, P , 0.40 , 16 , 2 ,0.60, 0.40, 1.60, 85, 1.66

```

Excel tự động chạy và mở file

The screenshot shows a Microsoft Excel window with the following details:

- File Tab:** AutoSave is off.
- Search Bar:** Speedup.txt... • Saved to this PC
- Comments & Share Buttons:** Sign in, Comments, Share
- Font & Style Buttons:** Calibri, Size 11, Bold, Italic, Underline, Font Color (Red), Alignment, Number, Conditional Formatting, Cell Styles, Insert, Delete, Format, Sort & Filter, Find & Select, Add-ins.
- Clipboard:** Paste, Cut, Copy, Undo, Redo.
- Alert Bar:** POSSIBLE DATA LOSS Some features might be lost if you save this workbook in the comma-delimited (.csv) format. To preserve these features, save it in an Excel file format. Don't show again, Save As...
- Table Data:**

	TT	SP	giatri	SoCoreN	Solantang S	P	Speedup	SoCoreTa	NewSpeedup	L	M	N	O	P	Q	R	S
1	TT	O S	0.25	2	2	0.25	0.75	1.6	10	3.2							
2		1 P	0.75	2	2	0.25	0.75	1.6	10	3.2							
3		2 P	0.4	8	2	0.6	0.4	1.54	93	1.66							
4		3 P	0.4	16	2	0.6	0.4	1.6	85	1.66							
5		4 P	0.67	2	2	0.33	0.67	1.5	99	2.97							
6		5 P	0.67	4	2	0.33	0.67	2.01	97	2.97							
7		6 P	0.9	2	2	0.1	0.9	1.82	4	4							
8		7 P	0.9	4	2	0.1	0.9	3.08	11	6.25							
9		8 P	0.36	1	2	0.64	0.36	1	100	1.55							
10		9 P	0.82	12	2	0.18	0.82	4.03	89	5.32							
11		10 S	0.33	3	2	0.33	0.67	1.81	98	2.97							
12		11 S	0.73	5	2	0.73	0.27	1.28	96	1.36							
13		12 P	0.58	14	2	0.42	0.58	2.17	87	2.35							
14		13 P	0.21	4	2	0.79	0.21	1.19	97	1.26							
15		14 S	0.49	11	2	0.49	0.51	1.86	90	2.02							
16		15 P	0.43	2	2	0.57	0.43	1.27	99	1.74							
17		16 P	0.75	5	2	0.25	0.75	2.5	96	3.88							

Speedup20250917 - Microsoft Visual Studio

```

int TangSoCore(double CurrentSpeedup, int NumCore, int ntime)
{
    if (ntime <= 0)
        return 0;
    double S = TinhSFromSpeedUp(CurrentSpeedup, NumCore);
    double LimitSpeedup = CurrentSpeedup * ntime; // 1/S
    int i = NumCore;
    double Speedup = CurrentSpeedup;
    while ((Speedup < LimitSpeedup) && (i<=100))
    {
        i++;
        Speedup = TinhSpeedupSN(S, i);
    }
    return i- NumCore;
}
void TestSpeedupS() { ... }
void TestSpeedupP() { ... }
void TestTinhSFromSpeedUp() { ... }

```

Ready Ln 45 Col 37 Ch 34 INS

- Lập trình đa tiêu trình cho mảng dữ liệu để tính Speedup (CreateThread)

Speedup20250917 - Microsoft Visual Studio

```

typedef struct _param_t
{
    pdata_t pdata;
    int Init;
    int Step;
    int Num;
} param_t, * pparam_t;
DWORD WINAPI TinhSpeedupThreadProc(LPVOID lpParam)
{
    printf("ThreadID = %ld\n", GetCurrentThreadId());
    pparam_t p = (pparam_t)lpParam;
    for (int i = p->Init; i < p->Num; i+=p->Step)
        TinhSpeedupData(p->pdata + i);

    return 0;
}
void TinhSpeedupMangDataMT(pdata_t p, int n, int NumThread)

```

Ready Ln 228 Col 31 Ch 22 INS

Speedup20250917 - Microsoft Visual Studio

```

void TinhSpeedupMangDataMT(pdata_t p, int n, int NumThread)
{
    HANDLE * h = (HANDLE *)malloc(NumThread * sizeof(HANDLE));
    DWORD * dwID = (DWORD *)malloc(NumThread * sizeof(DWORD));
    pparam_t param = (pparam_t)malloc(NumThread * sizeof(param_t));
    for (int i = 0; i < NumThread; i++)
    {
        param[i].pdata = p;
        param[i].Init = i;
        param[i].Step = NumThread;
        param[i].Num = n;
        h[i] = CreateThread(NULL, 0, TinhSpeedupThreadProc,
            (LPVOID)&param[i], 0, &dwID[i]);
    }
    WaitForMultipleObjects(NumThread, h, TRUE, INFINITE);
}

```

Ready Ln 161 Col 61 Ch 55 INS

Speedup20250917 - Microsoft Visual Studio

```

void main(int argc, char * argv[])
{
    //tham so : ten tap tin, so phan tu tap tin
    //Speedup20250917.exe d:\Speedup.txt 200 filenameout.csv 4
    if (argc < 5)
        printf("%s filename sophantu filenameout.csv NumThread\n",
            argv[0]), exit(0);
    int SoPhanTuMang = atoi(argv[2]);
    if (SoPhanTuMang<0)
        printf("So phan tu la so am\n"), exit(0);
    pdata_t pdata = (pdata_t)malloc(SoPhanTuMang * sizeof(data_t));
    if (!pdata)
        printf("Khong cap phat duoc bo nho\n"), exit(0);
    DocTapTin(argv[1],pdata, SoPhanTuMang);
    //TinhSpeedupMangData(pdata, SoPhanTuMang);
    int NumThread = atoi(argv[4]);
    if ((NumThread <= 0)|| (NumThread >= 100))
        NumThread = 4;
    TinhSpeedupMangDataMT(pdata, SoPhanTuMang, NumThread);
    //XuatData(pdata, SoPhanTuMang);
    XuatDataTapTin(argv[3], pdata, SoPhanTuMang);
    OpenExcel(argv[3]);
}

```

Ready Ln 161 Col 48 Ch 42 INS

//filechay.exe filename.txt sophantu filenameout.csv NumThread

Speedup20250917.exe Speedup.txt 200 Speedup.txt.csv 10

```
C:\Windows\System32\cmd.exe
d:\NOI\Speedup20251001\Debug>Speedup20250917.exe Speedup.txt 200 Speedup.txt.csv 10
```

Kết quả:

```
C:\Windows\System32\cmd.exe
183 P 0.09 7 2
184 S 0.83 7 2
185 P 0.91 16 2
186 P 0.32 16 2
187 S 0.26 15 2
188 S 0.45 14 2
189 S 0.68 5 2
190 S 0.97 15 2
191 S 0.12 17 2
192 S 0.52 7 2
193 P 0.40 13 2
194 S 0.56 20 2
195 P 0.99 6 2
196 P 0.20 13 2
197 P 0.95 10 2
198 S 0.24 15 2
199 S 0.95 4 2
ThreadId = 10124
ThreadId = 8164
ThreadId = 10116
ThreadId = 13792
ThreadId = 2152
ThreadId = 15328
ThreadId = 3612
ThreadId = 9544
ThreadId = 12668
ThreadId = 15264
d:\NOI\Speedup20251001\Debug>
```

TT	SP	giatri	SoCoreN	Solantang	S	P	Speedup	SoCoreTa	NewSpeedup
0	S	0.25	2	2	0.25	0.75	1.6	10	3.2
1	P	0.75	2	2	0.25	0.75	1.6	10	3.2
2	P	0.4	8	2	0.6	0.4	1.54	93	1.66
3	P	0.4	16	2	0.6	0.4	1.6	85	1.66
4	P	0.67	2	2	0.33	0.67	1.5	99	2.97
5	P	0.67	4	2	0.33	0.67	2.01	97	2.97
6	P	0.9	2	2	0.1	0.9	1.82	4	4
7	P	0.9	4	2	0.1	0.9	3.08	11	6.25
8	P	0.36	1	2	0.64	0.36	1	100	1.55
9	P	0.82	12	2	0.18	0.82	4.03	89	5.32
10	S	0.33	3	2	0.33	0.67	1.81	98	2.97
11	S	0.73	5	2	0.73	0.27	1.28	96	1.36
12	P	0.58	14	2	0.42	0.58	2.17	87	2.35
13	P	0.21	4	2	0.79	0.21	1.19	97	1.26
14	S	0.49	11	2	0.49	0.51	1.86	90	2.02
15	P	0.43	2	2	0.57	0.43	1.27	99	1.74
16	P	0.75	5	2	0.25	0.75	2.5	96	3.88
17	S	0.55	2	2	0.55	0.45	1.29	99	1.8
18	P	0.19	3	2	0.81	0.19	1.15	98	1.23

//=====Socket =====

```
#pragma comment(lib, "Ws2_32.lib")
```

```

//=====Socket =====
typedef struct _request_t
{
    char SP;
    double giatri;
    int SoCoreN;
    int Solantang;
} request_t, *prequest_t;

typedef struct _reply_t
{
    double S;
    double P;
    double Speedup;
    int SoCoreTang;
    double NewSpeedup;
} reply_t, *preply_t;

int InitializeWinsock()

```

Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Test Analyze Window Help

Speedup20250917 (Global Scope) InitializeWinsock()

```
int InitializeWinsock()
{
    WSADATA wsa;
    printf("\nInitializing Winsock...");
    if (WSAStartup(MAKEWORD(2, 2), &wsa) != 0)
    {
        printf("Failed. Error Code : %d", WSAGetLastError());
        exit(-1);
        return 0;
    }
    printf("Initialized.");
    return 1;
}

SOCKET SocketConnect(char * strServerIPAddress, u_short port)
{
    SOCKET s;
    if ((s = socket(AF_INET, SOCK_STREAM, 0)) == INVALID_SOCKET)
    {
        printf("Could not create socket : %d", WSAGetLastError());
    }
}
```

Ready

146 %

Ln 242 Col 24 Ch 24 INS

Speedup20250917 - Microsoft Visual Studio

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Speedup20250917 (Global Scope) SocketConnect(char * strServerIPAddress, u_short port)

```
if ((s = socket(AF_INET, SOCK_STREAM, 0)) == INVALID_SOCKET)
{
    printf("Could not create socket : %d", WSAGetLastError());
    exit(-1);
}
printf("Socket created.\n");
struct sockaddr_in server;
server.sin_addr.s_addr = inet_addr(strServerIPAddress);
server.sin_family = AF_INET;
server.sin_port = htons(port);
//Connect to remote server
if (connect(s, (struct sockaddr *)&server, sizeof(server)) < 0)
{
    puts("connect error");
    return 1;
}
puts("Connected");
return s;
}

void main1(int argc, char * argv[])
{
```

Ready

146 %

Ln 271 Col 6 Ch 3 INS

Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Speedup20250917 (Global Scope) Solution Explorer

Speedup.cpp

```
void main()
{
    InitializeWinsock();
    request_t req;
    req.SP = 'S';
    req.giatri = 0.25;
    req.SoCoreN = 2;
    req.Solantang = 2;

    char * SVRIPAddress = "172.17.14.54"; // Doi IP => dong lenh
    u_short port = 54321; // Port chua dung

    SOCKET svrsocket = SocketConnect(SVRIPAddress, port);
    send(svrsocket, (char*)&req, sizeof(req), 0);
    reply_t rep;
    recv(svrsocket, (char*)&rep, sizeof(rep), 0);

    printf("Req: SP = %c , giatri = %.2lf , Socore = %d ,Solantang = %d\n",
        req.SP, req.giatri, req.SoCoreN, req.Solantang);
}
```

Properties Solution Explorer Team Explorer Class View Properties C++ Solution Explorer Team Explorer Class View Properties C++

Ready Ln 271 Col 6 Ch 3 INS

Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Speedup20250917 (Global Scope) Solution Explorer

Speedup.cpp

```
req.SoCoreN = 2;
req.Solantang = 2;

char * SVRIPAddress = "172.17.14.54"; // Doi IP => dong lenh
u_short port = 54321; // Port chua dung

SOCKET svrsocket = SocketConnect(SVRIPAddress, port);
send(svrsocket, (char*)&req, sizeof(req), 0);
reply_t rep;
recv(svrsocket, (char*)&rep, sizeof(rep), 0);

printf("Req: SP = %c , giatri = %.2lf , Socore = %d ,Solantang = %d\n",
    req.SP, req.giatri, req.SoCoreN, req.Solantang);

printf("Reply: S = %.2lf, P = %.2lf, Speedup = %.2lf, SoCoreTang = %d, NewSpeedup =
    rep.S, rep.P, rep.Speedup, rep.SoCoreTang, rep.NewSpeedup);

closesocket(svrsocket);
WSACleanup();
```

double _reply_t::NewSpeedup

Properties Solution Explorer Team Explorer Class View Properties C++ Solution Explorer Team Explorer Class View Properties C++

Ready Ln 271 Col 6 Ch 3 INS

```
C:\WINDOWS\system32\cmd.exe

Initializing Winsock...Initialized.Socket created.
Connected
Req: SP = S , giatri = 0.25 , Socore = 2 ,Solantang = 2
Reply: S = 0.25, P = 0.75, Speedup = 1.60, SoCoreTang = 10, NewSpeedup = 3.20
Press any key to continue . . .
```

Tính toán trên nhiều Server:

Speedup20250917 - Microsoft Visual Studio

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Quick Launch (Ctrl+Q) Sign in

Speedup.cpp x

(Global Scope)

```
char * SVRIPAddress[] = { "172.17.14.54",
                           "172.17.14.54",
                           "172.17.14.54",
                           "172.17.14.54" };

int NumSVR = sizeof(SVRIPAddress)/sizeof(SVRIPAddress[0]);

u_short port = 54321; // Port chua dung

double TinhS(double P)
{
    double S = 1.0 - P;
    return S;
}
```

Solution Explorer

Search Solution Explorer

Solution 'Speedup20250917'

- Speedup20250917
 - External Dependencies
 - Header Files
 - References
 - Resource Files
 - Source Files
 - Speedup.cpp

Properties

Port VCCodeVariable

C++

(Name)	port
File	d:\NOI\Spec
FullName	port
InitExpression	54321
IsConstant	False

Ready

Col 1 Ch 1 IN5

Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Speedup.cpp (Global Scope) TinhSpeedupSN(double S, int N)

```
void main()
{
    InitializeWinsock();
    char * filename = "d:\\Speedup.txt";
    char * filenamecsv = "d:\\Speedup.txt.csv";
    int SoPhanTuMang = 4;
    pdata_t pdata = (pdata_t)malloc(SoPhanTuMang *sizeof(data_t));
    DocTapTin(filename, pdata, SoPhanTuMang);
    int NumThread = 4;
    TinhSpeedupMangDataMT(pdata, SoPhanTuMang, NumThread);
    //XuatData(pdata, SoPhanTuMang);
    XuatDataTapTin(filenamecsv, pdata, SoPhanTuMang);
    OpenExcel(filenamecsv);
}
```

int SoPhanTuMang

195 % Ready Ln 45 Col 26 Ch 23 INS

Solution Explorer Properties Task List Output Error List Solution Configurations

Solution Speedup20250917 Speedup20250917 External Dependencies Header Files References Resource Files Source Files Speedup.cpp

TinhSpeedupSN VCCodeFun

C++ (Name) TinhSpeedup File d:\\NOI\\Spe FullName IsDefault False IsDelete False

Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Speedup20250917 _param_t Speedup20250917

```
TinhSpeedupData(p + i);

typedef struct _param_t
{
    pdata_t pdata;
    int Init;
    int Step;
    int Num;
    char * SVRIP;
    u_short port;
} param_t, * pparam_t;

DWORD WINAPI TinhSpeedupThreadProc(LPVOID lpParam)
{
    printf("ThreadID = %d\n", GetCurrentThreadId());
}
```

port VCCodeVariable

C++ (Name) port Access public File d:\\NOI\\Spe FullName _param_t::port InitExpression

214 % Ready Ln 197 Col 18 Ch 15 INS

Solution Explorer Properties Task List Output Error List Solution Configurations

Solution Speedup20250917 Speedup20250917 External Dependencies Header Files References Resource Files Source Files Speedup.cpp

TinhSpeedup VCCodeFun

C++ (Name) port Access public File d:\\NOI\\Spe FullName _param_t::port InitExpression

```
void TinhSpeedupMangDataMT(pdata_t p, int n, int NumThread)
{
    HANDLE * h = (HANDLE *)malloc(NumThread * sizeof(HANDLE));
    DWORD * dwID = (DWORD *)malloc(NumThread * sizeof(DWORD));
    pparam_t param = (pparam_t)malloc(NumThread * sizeof(param_t));
    for (int i = 0; i < NumThread; i++)
    {
        param[i].pdata = p;
        param[i].Init = i;
        param[i].Step = NumThread;
        param[i].Num = n;
        param[i].SVRIP = SVRIPAddress[i%NumSVR];
        param[i].port = port;
        h[i] = CreateThread(NULL, 0, TinhSpeedupThreadProc,
            (LPVOID)&param[i], 0, &dwID[i]);
    }
    WaitForMultipleObjects(NumThread, h, TRUE, INFINITE);
}
```

```
} pparam_t, * pparam_t;
DWORD WINAPI TinhSpeedupThreadProc(LPVOID lpParam)
{
    printf("ThreadID = %ld\n", GetCurrentThreadId());
    pparam_t p = (pparam_t)lpParam;
    for (int i = p->Init; i < p->Num; i += p->Step)
    {
        TinhSpeedupDataTCP(p->pdata + i, p->SVRIP, p->port);
        //TinhSpeedup
    }
    return 0;
}
void TinhSpeedupMangDataMT(pdata_t p, int n, int NumThread)
{
    HANDLE * h = (HANDLE *)malloc(NumThread * sizeof(HANDLE));
```

Speedup20250917 - Microsoft Visual Studio

File Edit View Project Build Debug Team Tools Test Analyze Window Help

Speedup20250917 (Global Scope) Local Windows Debugger

Speedup.cpp

```
void TinhSpeedupDataTCP(pdata_t p, char * SVRIPAddress, u_short port ) {
    request_t req;
    req.SP = p->SP;
    req.giatri = p->giatri;
    req.SoCoreN = p->SoCoreN;
    req.Solantang = p->Solantang;

    SOCKET svrsocket = SocketConnect(SVRIPAddress, port);
    send(svrsocket, (char*)&req, sizeof(req), 0);
    reply_t rep;
    recv(svrsocket, (char*)&rep, sizeof(rep), 0);

    // ...

    p->S = rep.S;
    p->P = rep.P;
    p->Speedup = rep.Speedup;
    p->SoCoreTang = rep.SoCoreTang;
    p->NewSpeedup = rep.NewSpeedup;

    closesocket(svrsocket);
}
```

133 % 4

Ready

Ln 210 Col 42 Ch 42 INS

```
C:\Windows\System32\cmd.exe - TCPServer.exe
Microsoft Windows [Version 10.0.26100.6584]
(c) Microsoft Corporation. All rights reserved.

d:\NOI\TCPServer2025101\Debug>TCPServer.exe

Initializing Winsock...Initialized.Socket created.
Bind done
Client IP address: 172.17.14.54
Client Port: 59608
Client IP address: 172.17.14.54
Client Port: 53604
Client IP address: 172.17.14.54
Client Port: 53601
Client IP address: 172.17.14.54
Client Port: 53603
Client IP address: 172.17.14.54
Client Port: 53602
Client IP address: 172.17.14.54
Client Port: 53654
Client IP address: 172.17.14.54
Client Port: 53657
Client IP address: 172.17.14.54
Client Port: 53655
Client IP address: 172.17.14.54
Client Port: 53656
```

```
C:\WINDOWS\system32\cmd.exe

Initializing Winsock...Initialized.SP GiaTri SoCoreN Solantang
0 S 0.25 2 2
1 P 0.75 2 2
2 P 0.40 8 2
3 P 0.40 16 2
ThreadID = 16480
ThreadID = 19356
ThreadID = 18316
ThreadID = 17832
Socket created.
Socket created.
Socket created.
Socket created.
Connected
Connected
Connected
Connected
Connected
Press any key to continue . . .
```

AutoSave (Off) Speedup.txt • Saved to this PC Search Sign in

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Clipboard Calibri 11 Alignment General Conditional Formatting Format as Table Cell Styles Cells Sort & Filter Find & Select Format Add-ins

O9 :

TT	SP	giatri	SoCoreN	Solantang	P	Speedup	SoCoreTa	NewSpeedup
2	0 S	0.25	2	2	0.25	0.75	1.6	10 3.2
3	1 P	0.75	2	2	0.25	0.75	1.6	10 3.2
4	2 P	0.4	8	2	0.6	0.4	1.54	93 1.66
5	3 P	0.4	16	2	0.6	0.4	1.6	85 1.66

Ready Accessibility: Unavailable - + 100%