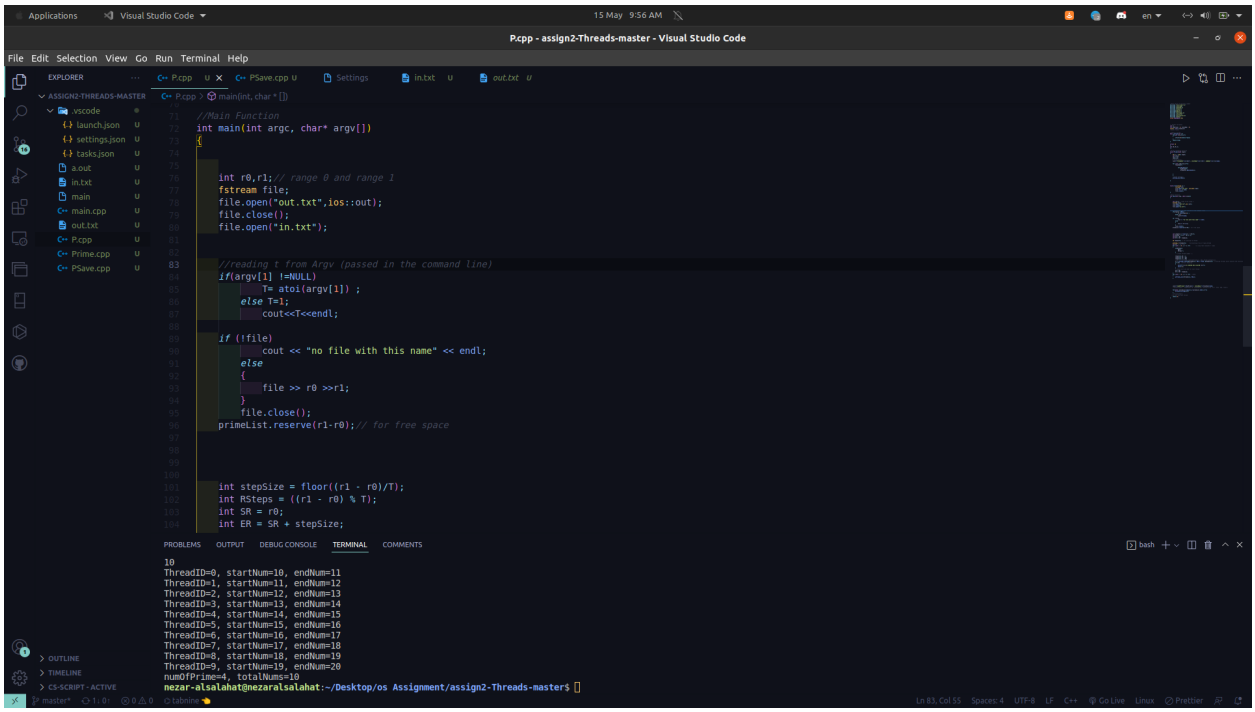
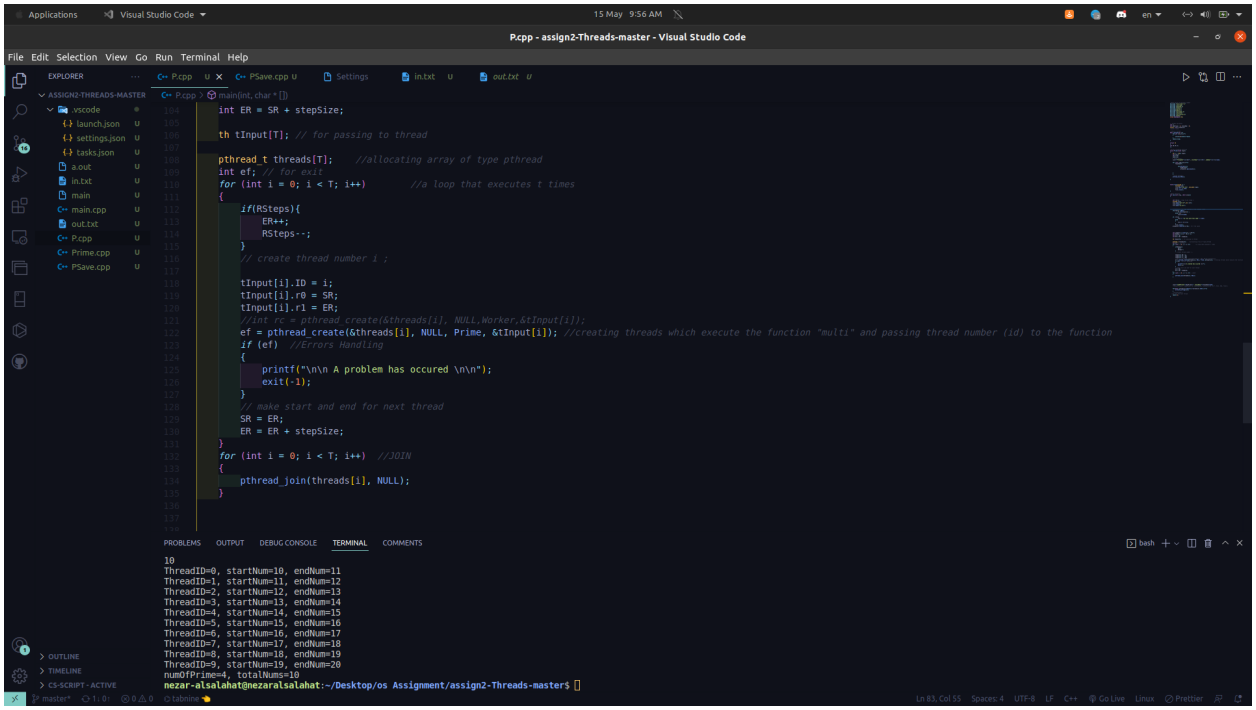
Assignment : Threading

By :
Nezar Al-Salahat
132827
Raghad Ghalib
137144

Task 1:


Applications
Visual Studio Code
15 May 9:56 AM
en
P.cpp - assign2-Threads-master - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
ASSIGN2-THREADS-MASTER
vscode
launch.json
settings.json
tasks.json
a.out
in.txt
main
main.cpp
out.txt
P.cpp
Prime.cpp
PSave.cpp
P.cpp
PSave.cpp
Settings
in.txt
out.txt
P.cpp > main(int, char * [])
//Main Function
int main(int argc, char* argv[])
{
int r0,r1;// range 0 and range 1
fstream file;
file.open("out.txt",ios::out);
file.close();
file.open("in.txt");
//reading t from Argv (passed in the command line)
if(argv[1] !=NULL)
T= atoi(argv[1]) ;
else T=1;
cout<<T<<endl;
if (!file)
cout << "no file with this name" << endl;
else
{
file >> r0 >>r1;
}
file.close();
primeList.reserve(r1-r0);// for free space
int stepSize = floor((r1 - r0)/T);
int RSteps = ((r1 - r0) % T);
int SR = r0;
int ER = SR + stepSize;
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
COMMENTS
bash
10
ThreadID=0, startNum=10, endNum=11
ThreadID=1, startNum=11, endNum=12
ThreadID=2, startNum=12, endNum=13
ThreadID=3, startNum=13, endNum=14
ThreadID=4, startNum=14, endNum=15
ThreadID=5, startNum=15, endNum=16
ThreadID=6, startNum=16, endNum=17
ThreadID=7, startNum=17, endNum=18
ThreadID=8, startNum=18, endNum=19
ThreadID=9, startNum=19, endNum=20
numOfPrime=4, totalNums=10
nezar-alsalahat@nezaralsalahat:~/Desktop/os Assignment/assign2-Threads-master$
OUTLINE
TIMELINE
CS-SCRIPT - ACTIVE


Applications
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P.cpp - assign2-Threads-master - Visual Studio Code
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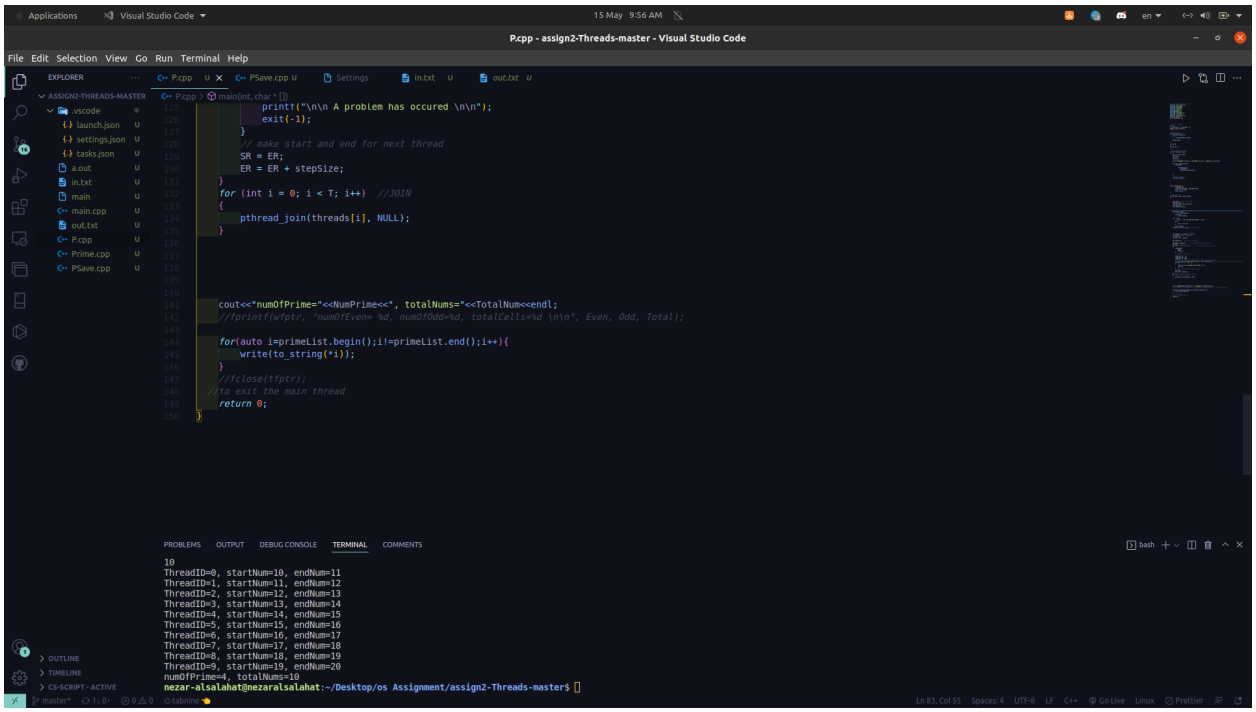
EXPLORER
P.cpp
PSave.cpp
Settings
in.txt
out.txt
ASSIGN2-THREADS-MASTER
.vscode
launch.json
settings.json
tasks.json
a.out
in.txt
main
main.cpp
out.txt
P.cpp
Prime.cpp
PSave.cpp
int ER = SR + stepSize;
th tInput[T]; // for passing to thread
pthread_t threads[T];
//allocating array of type pthread
int ef; // for exit
for (int i = 0; i < T; i++)
//a loop that executes t times
{
if(RSteps){
ER++;
RSteps--;
}
// create thread number i ;
tInput[i].ID = i;
tInput[i].r0 = SR;
tInput[i].r1 = ER;
//int rc = pthread_create(&threads[i], NULL,Worker,&tInput[i]);
ef = pthread_create(&threads[i], NULL, Prime, &tInput[i]); //creating threads which execute the function "multi" and passing thread number (id) to the function
if (ef) //Errors Handling
{
printf("\n\n A problem has occured \n\n");
exit(-1);
}
// make start and end for next thread
SR = ER;
ER = ER + stepSize;
}
for (int i = 0; i < T; i++) //JOIN
{
pthread_join(threads[i], NULL);
}
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
COMMENTS
bash
10
ThreadID=0, startNum=10, endNum=11
ThreadID=1, startNum=11, endNum=12
ThreadID=2, startNum=12, endNum=13
ThreadID=3, startNum=13, endNum=14
ThreadID=4, startNum=14, endNum=15
ThreadID=5, startNum=15, endNum=16
ThreadID=6, startNum=16, endNum=17
ThreadID=7, startNum=17, endNum=18
ThreadID=8, startNum=18, endNum=19
ThreadID=9, startNum=19, endNum=20
numOfPrime=4, totalNums=10
nezar-alsalahat@nezaralsalahat:~/Desktop/os Assignment/assign2-Threads-master$
OUTLINE
TIMELINE
CS-SCRIPT - ACTIVE
master*
tabnine
Ln 83, Col 55
Spaces: 4
UTF-8
LF
C++
Go Live
Linux
Prettier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P.cpp - assign2-Threads-master - Visual Studio Code
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PSave.cpp
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tasks.json
a.out
in.txt
main
main.cpp
out.txt
P.cpp
Prime.cpp
PSave.cpp
printf("\n\n A problem has occured \n\n");
exit(-1);
}
// make start and end for next thread
SR = ER;
ER = ER + stepSize;
}
for (int i = 0; i < T; i++) //JOIN
{
pthread_join(threads[i], NULL);
}
cout<<"numOfPrime="<<NumPrime<<", totalNums="<<TotalNum<<endl;
//fprintf(wfptr, "numOfEven= %d, numOfOdd=%d, totalCells=%d \n\n", Even, Odd, Total);
for(auto i=primeList.begin();i!=primeList.end();i++){
write(to_string(*i));
}
//fclose(tfptr);
//to exit the main thread
return 0;
}
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
COMMENTS
bash
10
ThreadID=0, startNum=10, endNum=11
ThreadID=1, startNum=11, endNum=12
ThreadID=2, startNum=12, endNum=13
ThreadID=3, startNum=13, endNum=14
ThreadID=4, startNum=14, endNum=15
ThreadID=5, startNum=15, endNum=16
ThreadID=6, startNum=16, endNum=17
ThreadID=7, startNum=17, endNum=18
ThreadID=8, startNum=18, endNum=19
ThreadID=9, startNum=19, endNum=20
numOfPrime=4, totalNums=10
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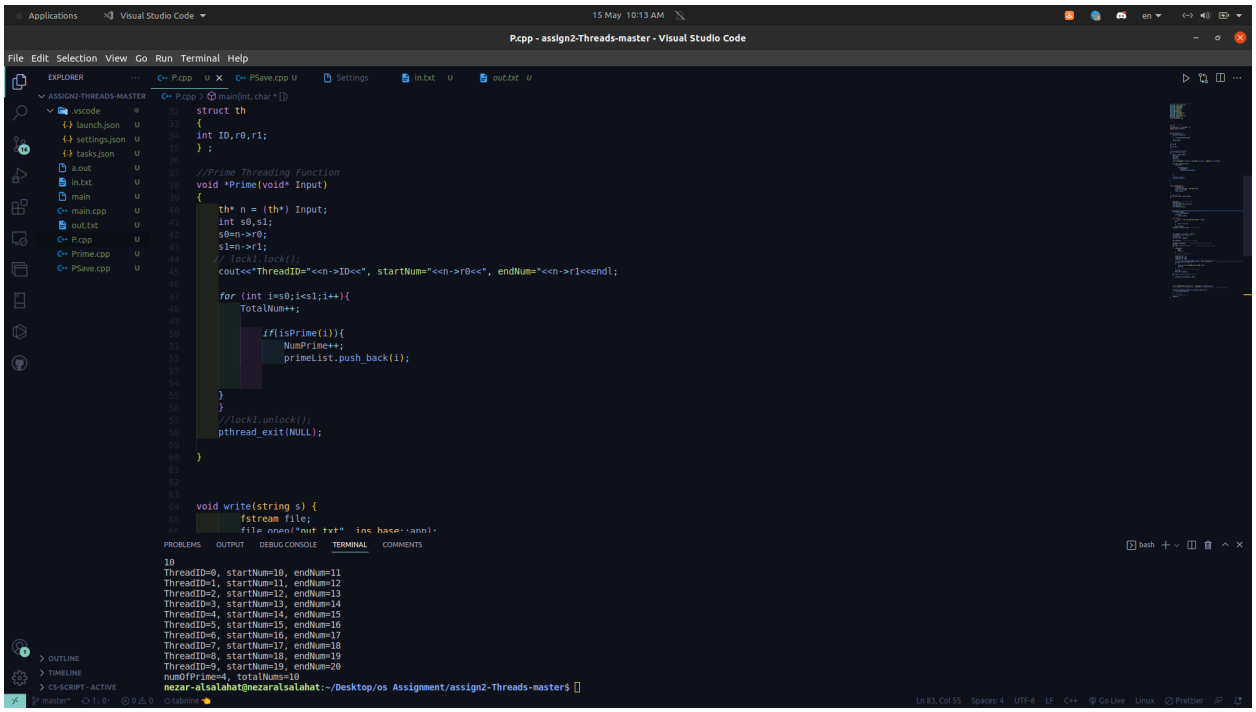
TIMELINE
CS-SCRIPT - ACTIVE
master*
tabnine
Ln 83, Col 55
Spaces: 4
UTF-8
LF
C++
Go Live
Linux
Prettier

Task 2:


P.cpp - assign2-Threads-master - Visual Studio Code
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ASSIGN2-THREADS-MASTER
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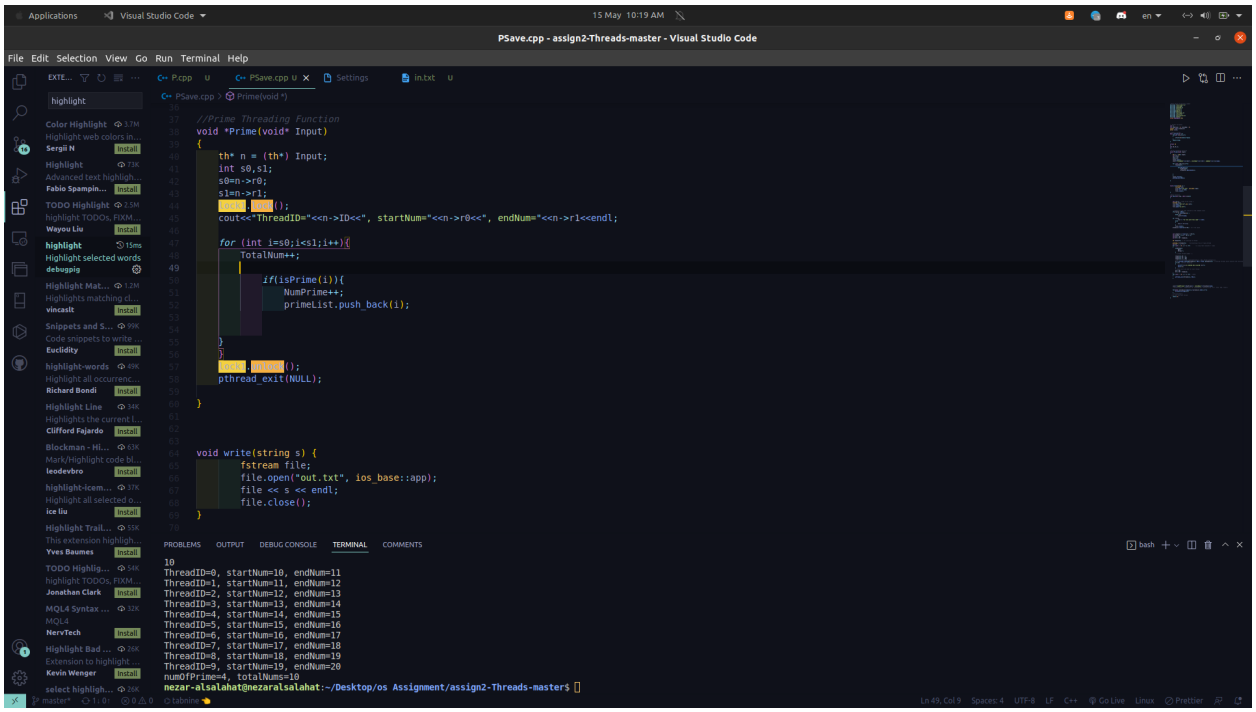
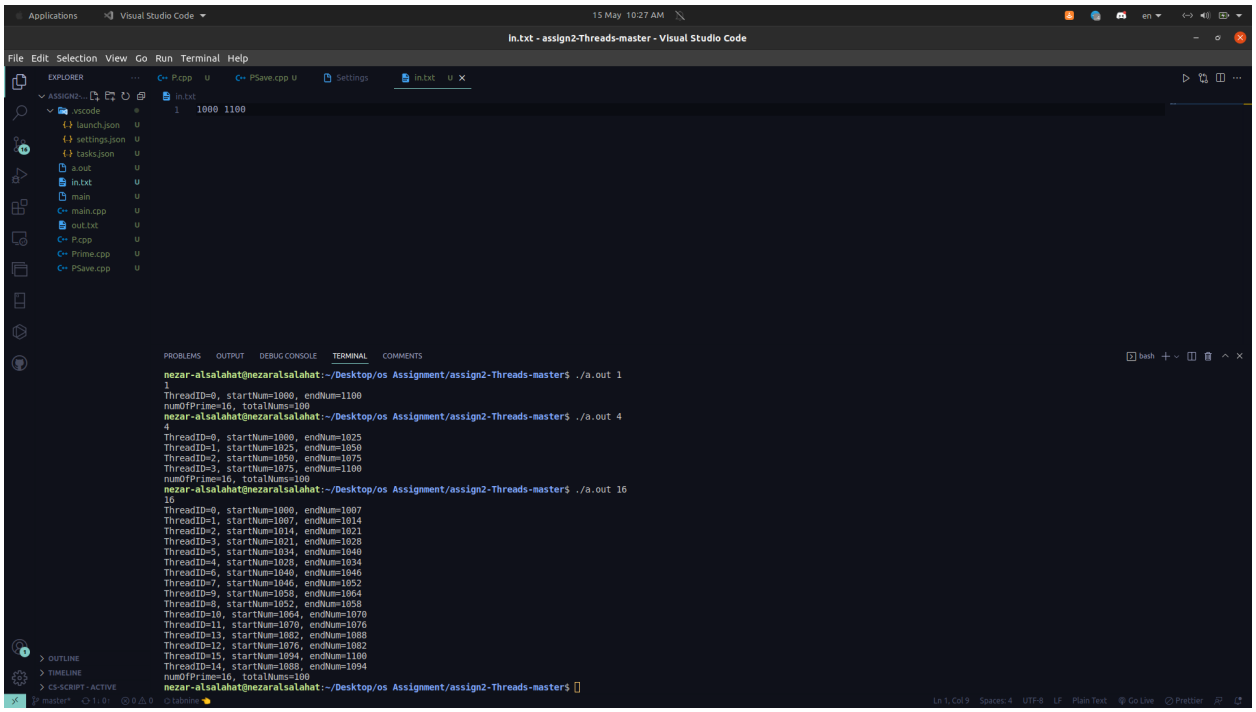
OUTLINE
TIMELINE
CS-SCRIPT - ACTIVE
P.cpp
PSave.cpp
Settings
in.txt
out.txt
struct th
{
int ID,r0,r1;
} ;
//Prime Threading Function
void *Prime(void* Input)
{
th* n = (th*) Input;
int s0,s1;
s0=n->r0;
s1=n->r1;
// lock1.lock();
cout<<"ThreadID="<<n->ID<<", startNum="<<n->r0<<", endNum="<<n->r1<<endl;
for (int i=s0;i<s1;i++){
TotalNum++;
if(isPrime(i)){
NumPrime++;
primeList.push_back(i);
}
}
//lock1.unlock();
pthread_exit(NULL);
}
void write(string s) {
fstream file;
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
COMMENTS
bash
10
ThreadID=0, startNum=10, endNum=11
ThreadID=1, startNum=11, endNum=12
ThreadID=2, startNum=12, endNum=13
ThreadID=3, startNum=13, endNum=14
ThreadID=4, startNum=14, endNum=15
ThreadID=5, startNum=15, endNum=16
ThreadID=6, startNum=16, endNum=17
ThreadID=7, startNum=17, endNum=18
ThreadID=8, startNum=18, endNum=19
ThreadID=9, startNum=19, endNum=20
numOfPrime=4, totalNums=10
nezar-alsalahat@nezaralsalahat:~/Desktop/os Assignment/assign2-Threads-master$

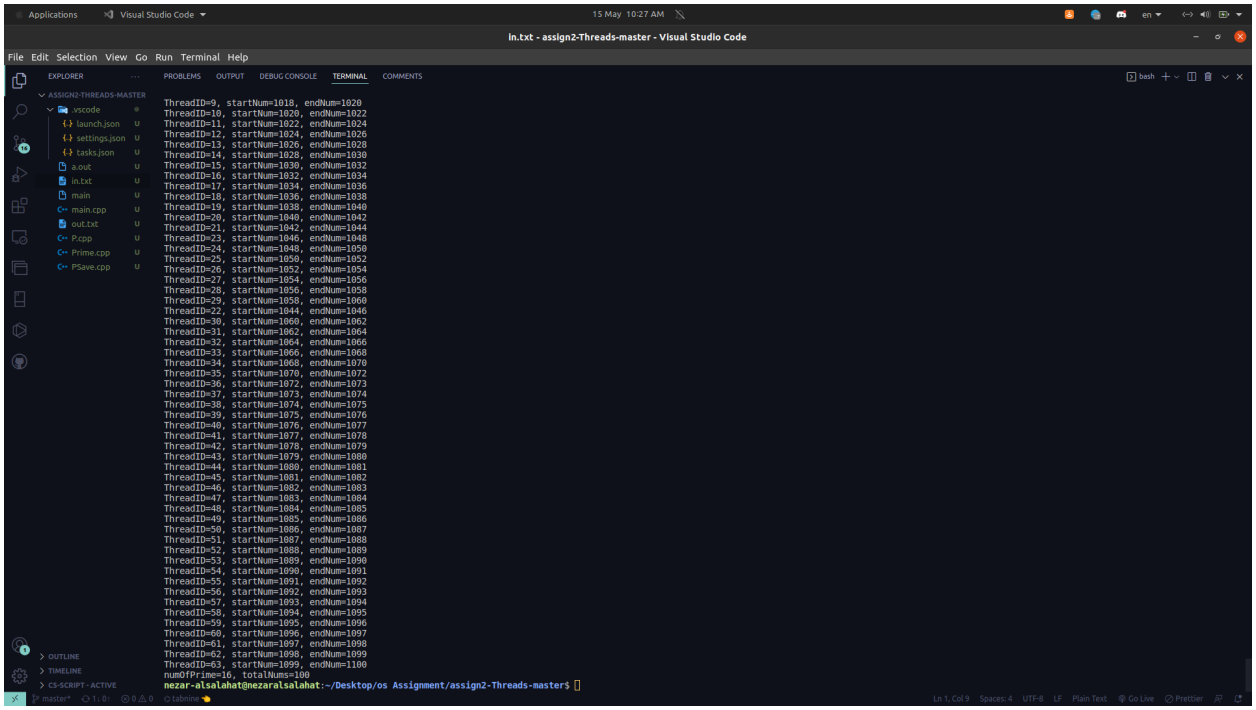
Task3:

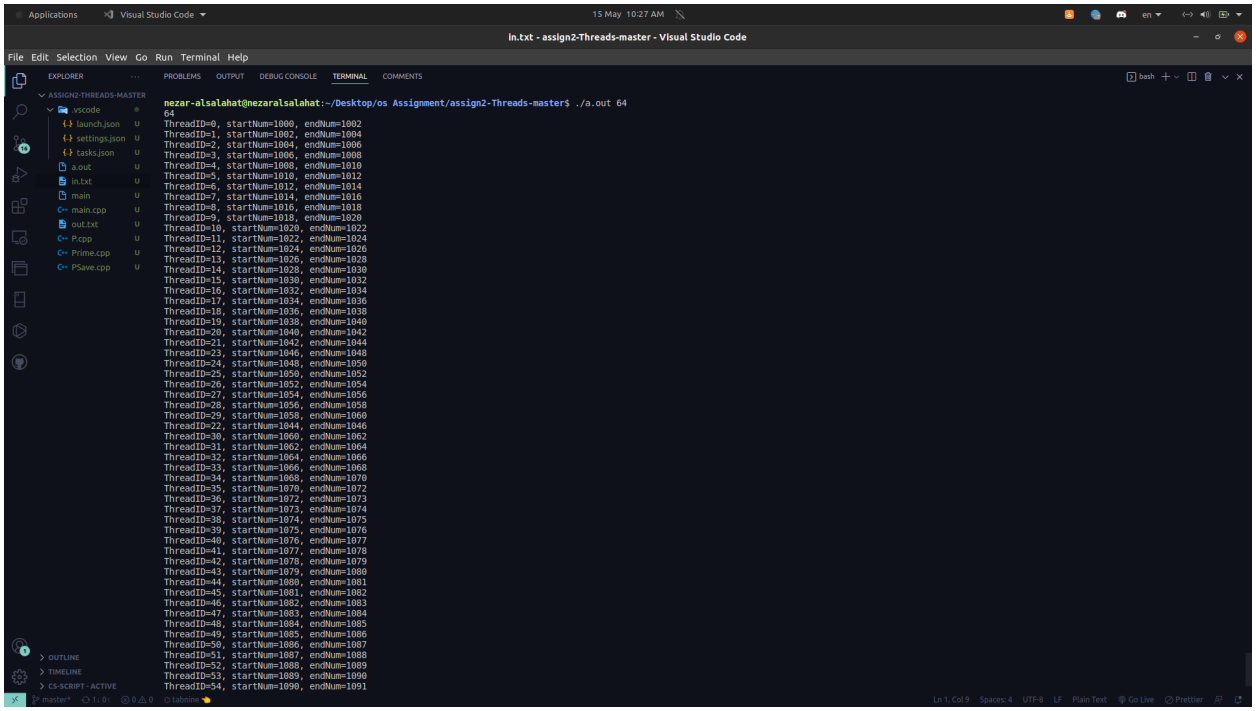


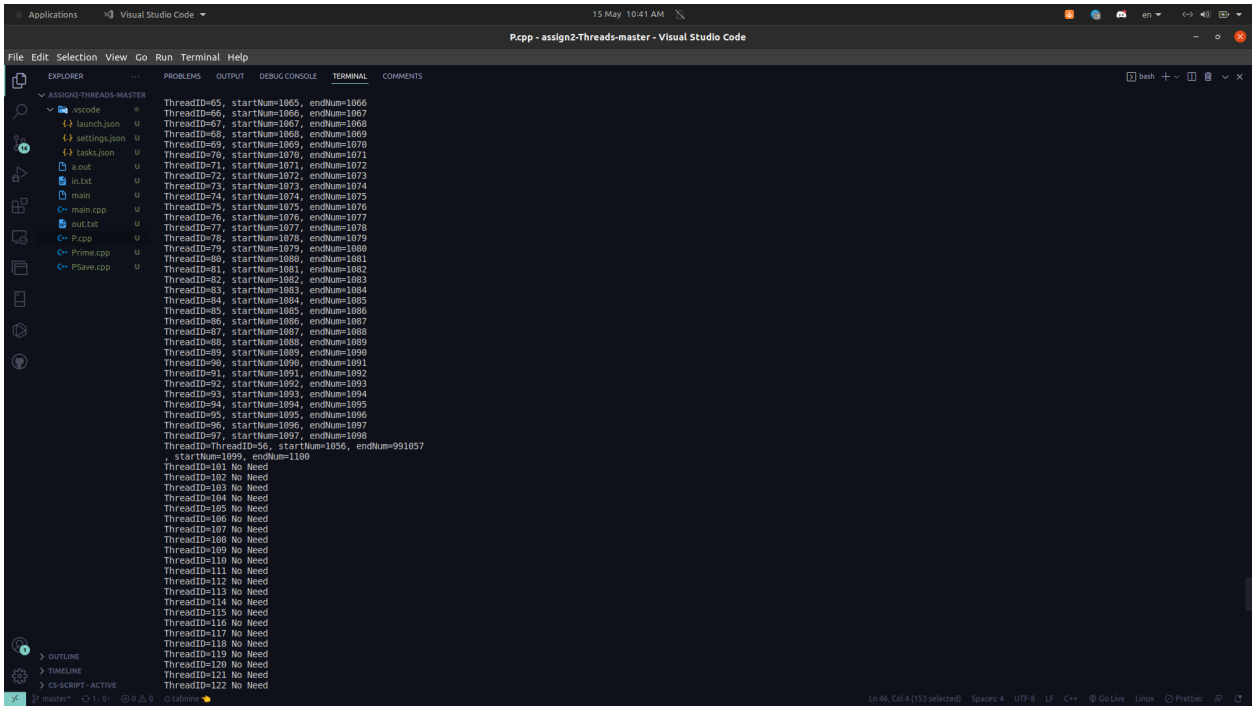
Lock1: we used this lock on critical section, to save the global variables NumPrime, TotalNum And for saving output style from racing between threads, because these variables are shared between all the threads and all the threads (more than 1) write on them.

Task 4:
No Save




Applications
Visual Studio Code
15 May 10:27 AM
en
in.txt - assign2-Threads-master - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS
bash
ASSIGN2-THREADS-MASTER
.vscode
launch.json
settings.json
tasks.json
a.out
in.txt
main
main.cpp
out.txt
P.cpp
Prime.cpp
PSave.cpp
ThreadID=9, startNum=1018, endNum=1020
ThreadID=10, startNum=1020, endNum=1022
ThreadID=11, startNum=1022, endNum=1024
ThreadID=12, startNum=1024, endNum=1026
ThreadID=13, startNum=1026, endNum=1028
ThreadID=14, startNum=1028, endNum=1030
ThreadID=15, startNum=1030, endNum=1032
ThreadID=16, startNum=1032, endNum=1034
ThreadID=17, startNum=1034, endNum=1036
ThreadID=18, startNum=1036, endNum=1038
ThreadID=19, startNum=1038, endNum=1040
ThreadID=20, startNum=1040, endNum=1042
ThreadID=21, startNum=1042, endNum=1044
ThreadID=23, startNum=1046, endNum=1048
ThreadID=24, startNum=1048, endNum=1050
ThreadID=25, startNum=1050, endNum=1052
ThreadID=26, startNum=1052, endNum=1054
ThreadID=27, startNum=1054, endNum=1056
ThreadID=28, startNum=1056, endNum=1058
ThreadID=29, startNum=1058, endNum=1060
ThreadID=22, startNum=1044, endNum=1046
ThreadID=30, startNum=1060, endNum=1062
ThreadID=31, startNum=1062, endNum=1064
ThreadID=32, startNum=1064, endNum=1066
ThreadID=33, startNum=1066, endNum=1068
ThreadID=34, startNum=1068, endNum=1070
ThreadID=35, startNum=1070, endNum=1072
ThreadID=36, startNum=1072, endNum=1073
ThreadID=37, startNum=1073, endNum=1074
ThreadID=38, startNum=1074, endNum=1075
ThreadID=39, startNum=1075, endNum=1076
ThreadID=40, startNum=1076, endNum=1077
ThreadID=41, startNum=1077, endNum=1078
ThreadID=42, startNum=1078, endNum=1079
ThreadID=43, startNum=1079, endNum=1080
ThreadID=44, startNum=1080, endNum=1081
ThreadID=45, startNum=1081, endNum=1082
ThreadID=46, startNum=1082, endNum=1083
ThreadID=47, startNum=1083, endNum=1084
ThreadID=48, startNum=1084, endNum=1085
ThreadID=49, startNum=1085, endNum=1086
ThreadID=50, startNum=1086, endNum=1087
ThreadID=51, startNum=1087, endNum=1088
ThreadID=52, startNum=1088, endNum=1089
ThreadID=53, startNum=1089, endNum=1090
ThreadID=54, startNum=1090, endNum=1091
ThreadID=55, startNum=1091, endNum=1092
ThreadID=56, startNum=1092, endNum=1093
ThreadID=57, startNum=1093, endNum=1094
ThreadID=58, startNum=1094, endNum=1095
ThreadID=59, startNum=1095, endNum=1096
ThreadID=60, startNum=1096, endNum=1097
ThreadID=61, startNum=1097, endNum=1098
ThreadID=62, startNum=1098, endNum=1099
ThreadID=63, startNum=1099, endNum=1100
numOfPrime=10, totalNums=100
nezar-alsalahat@nezaralsalahat:~/Desktop/os Assignment/assign2-Threads-master$
OUTLINE
TIMELINE
CS-SCRIPT - ACTIVE
master*
Ln 1, Col 9 Spaces: 4 UTF-8 LF Plain Text Go Live Prettier


Applications
Visual Studio Code
15 May 10:27 AM
en
in.txt - assign2-Threads-master - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS
bash
ASSIGN2-THREADS-MASTER
.vscode
launch.json
settings.json
tasks.json
a.out
in.txt
main
main.cpp
out.txt
P.cpp
Prime.cpp
PSave.cpp
nezar-alsalahat@nezaralsalahat:~/Desktop/os Assignment/assign2-Threads-master$ ./a.out 64
64
ThreadID=0, startNum=1000, endNum=1002
ThreadID=1, startNum=1002, endNum=1004
ThreadID=2, startNum=1004, endNum=1006
ThreadID=3, startNum=1006, endNum=1008
ThreadID=4, startNum=1008, endNum=1010
ThreadID=5, startNum=1010, endNum=1012
ThreadID=6, startNum=1012, endNum=1014
ThreadID=7, startNum=1014, endNum=1016
ThreadID=8, startNum=1016, endNum=1018
ThreadID=9, startNum=1018, endNum=1020
ThreadID=10, startNum=1020, endNum=1022
ThreadID=11, startNum=1022, endNum=1024
ThreadID=12, startNum=1024, endNum=1026
ThreadID=13, startNum=1026, endNum=1028
ThreadID=14, startNum=1028, endNum=1030
ThreadID=15, startNum=1030, endNum=1032
ThreadID=16, startNum=1032, endNum=1034
ThreadID=17, startNum=1034, endNum=1036
ThreadID=18, startNum=1036, endNum=1038
ThreadID=19, startNum=1038, endNum=1040
ThreadID=20, startNum=1040, endNum=1042
ThreadID=21, startNum=1042, endNum=1044
ThreadID=23, startNum=1046, endNum=1048
ThreadID=24, startNum=1048, endNum=1050
ThreadID=25, startNum=1050, endNum=1052
ThreadID=26, startNum=1052, endNum=1054
ThreadID=27, startNum=1054, endNum=1056
ThreadID=28, startNum=1056, endNum=1058
ThreadID=29, startNum=1058, endNum=1060
ThreadID=22, startNum=1044, endNum=1046
ThreadID=30, startNum=1060, endNum=1062
ThreadID=31, startNum=1062, endNum=1064
ThreadID=32, startNum=1064, endNum=1066
ThreadID=33, startNum=1066, endNum=1068
ThreadID=34, startNum=1068, endNum=1070
ThreadID=35, startNum=1070, endNum=1072
ThreadID=36, startNum=1072, endNum=1073
ThreadID=37, startNum=1073, endNum=1074
ThreadID=38, startNum=1074, endNum=1075
ThreadID=39, startNum=1075, endNum=1076
ThreadID=40, startNum=1076, endNum=1077
ThreadID=41, startNum=1077, endNum=1078
ThreadID=42, startNum=1078, endNum=1079
ThreadID=43, startNum=1079, endNum=1080
ThreadID=44, startNum=1080, endNum=1081
ThreadID=45, startNum=1081, endNum=1082
ThreadID=46, startNum=1082, endNum=1083
ThreadID=47, startNum=1083, endNum=1084
ThreadID=48, startNum=1084, endNum=1085
ThreadID=49, startNum=1085, endNum=1086
ThreadID=50, startNum=1086, endNum=1087
ThreadID=51, startNum=1087, endNum=1088
ThreadID=52, startNum=1088, endNum=1089
ThreadID=53, startNum=1089, endNum=1090
ThreadID=54, startNum=1090, endNum=1091
OUTLINE
TIMELINE
CS-SCRIPT - ACTIVE
master*
Ln 1, Col 9 Spaces: 4 UTF-8 LF Plain Text Go Live Prettier


Applications
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tasks.json
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main
main.cpp
out.txt
P.cpp
Prime.cpp
PSave.cpp
ThreadID=65, startNum=1065, endNum=1066
ThreadID=66, startNum=1066, endNum=1067
ThreadID=67, startNum=1067, endNum=1068
ThreadID=68, startNum=1068, endNum=1069
ThreadID=69, startNum=1069, endNum=1070
ThreadID=70, startNum=1070, endNum=1071
ThreadID=71, startNum=1071, endNum=1072
ThreadID=72, startNum=1072, endNum=1073
ThreadID=73, startNum=1073, endNum=1074
ThreadID=74, startNum=1074, endNum=1075
ThreadID=75, startNum=1075, endNum=1076
ThreadID=76, startNum=1076, endNum=1077
ThreadID=77, startNum=1077, endNum=1078
ThreadID=78, startNum=1078, endNum=1079
ThreadID=79, startNum=1079, endNum=1080
ThreadID=80, startNum=1080, endNum=1081
ThreadID=81, startNum=1081, endNum=1082
ThreadID=82, startNum=1082, endNum=1083
ThreadID=83, startNum=1083, endNum=1084
ThreadID=84, startNum=1084, endNum=1085
ThreadID=85, startNum=1085, endNum=1086
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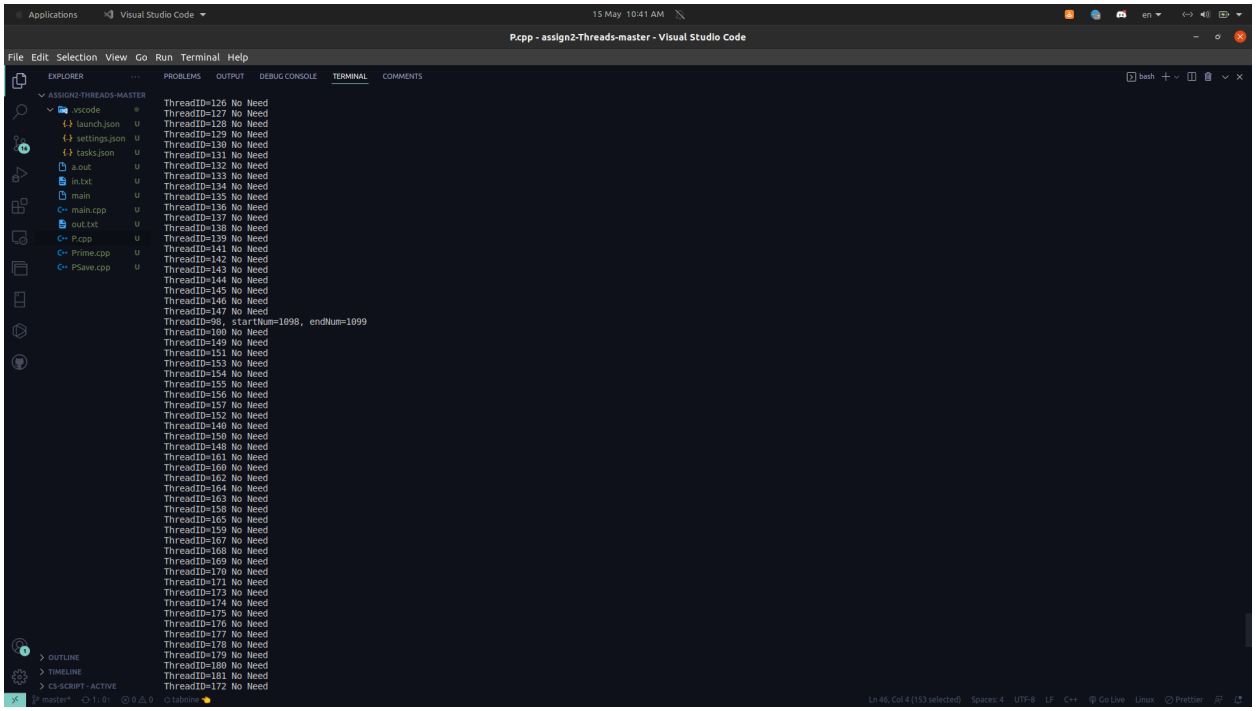
ThreadID=87, startNum=1087, endNum=1088
ThreadID=88, startNum=1088, endNum=1089
ThreadID=89, startNum=1089, endNum=1090
ThreadID=90, startNum=1090, endNum=1091
ThreadID=91, startNum=1091, endNum=1092
ThreadID=92, startNum=1092, endNum=1093
ThreadID=93, startNum=1093, endNum=1094
ThreadID=94, startNum=1094, endNum=1095
ThreadID=95, startNum=1095, endNum=1096
ThreadID=96, startNum=1096, endNum=1097
ThreadID=97, startNum=1097, endNum=1098
ThreadID=ThreadID=56, startNum=1056, endNum=991057
, startNum=1099, endNum=1100
ThreadID=101 No Need
ThreadID=102 No Need
ThreadID=103 No Need
ThreadID=104 No Need
ThreadID=105 No Need
ThreadID=106 No Need
ThreadID=107 No Need
ThreadID=108 No Need
ThreadID=109 No Need
ThreadID=110 No Need
ThreadID=111 No Need
ThreadID=112 No Need
ThreadID=113 No Need
ThreadID=114 No Need
ThreadID=115 No Need
ThreadID=116 No Need
ThreadID=117 No Need
ThreadID=118 No Need
ThreadID=119 No Need
ThreadID=120 No Need
ThreadID=121 No Need
ThreadID=122 No Need
OUTLINE
TIMELINE
CS-SCRIPT - ACTIVE
master*
Ln 46, Col 4 (153 selected)
Spaces: 4
UTF-8
LF
C++
Go Live
Linux
Prettier


Applications
Visual Studio Code
15 May 10:41 AM
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ASSIGN2-THREADS-MASTER
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launch.json
settings.json
tasks.json
a.out
in.txt
main
main.cpp
out.txt
P.cpp
Prime.cpp
PSave.cpp
ThreadID=126 No Need
ThreadID=127 No Need
ThreadID=128 No Need
ThreadID=129 No Need
ThreadID=130 No Need
ThreadID=131 No Need
ThreadID=132 No Need
ThreadID=133 No Need
ThreadID=134 No Need
ThreadID=135 No Need
ThreadID=136 No Need
ThreadID=137 No Need
ThreadID=138 No Need
ThreadID=139 No Need
ThreadID=141 No Need
ThreadID=142 No Need
ThreadID=143 No Need
ThreadID=144 No Need
ThreadID=145 No Need
ThreadID=146 No Need
ThreadID=147 No Need
ThreadID=98, startNum=1098, endNum=1099
ThreadID=100 No Need
ThreadID=149 No Need
ThreadID=151 No Need
ThreadID=153 No Need
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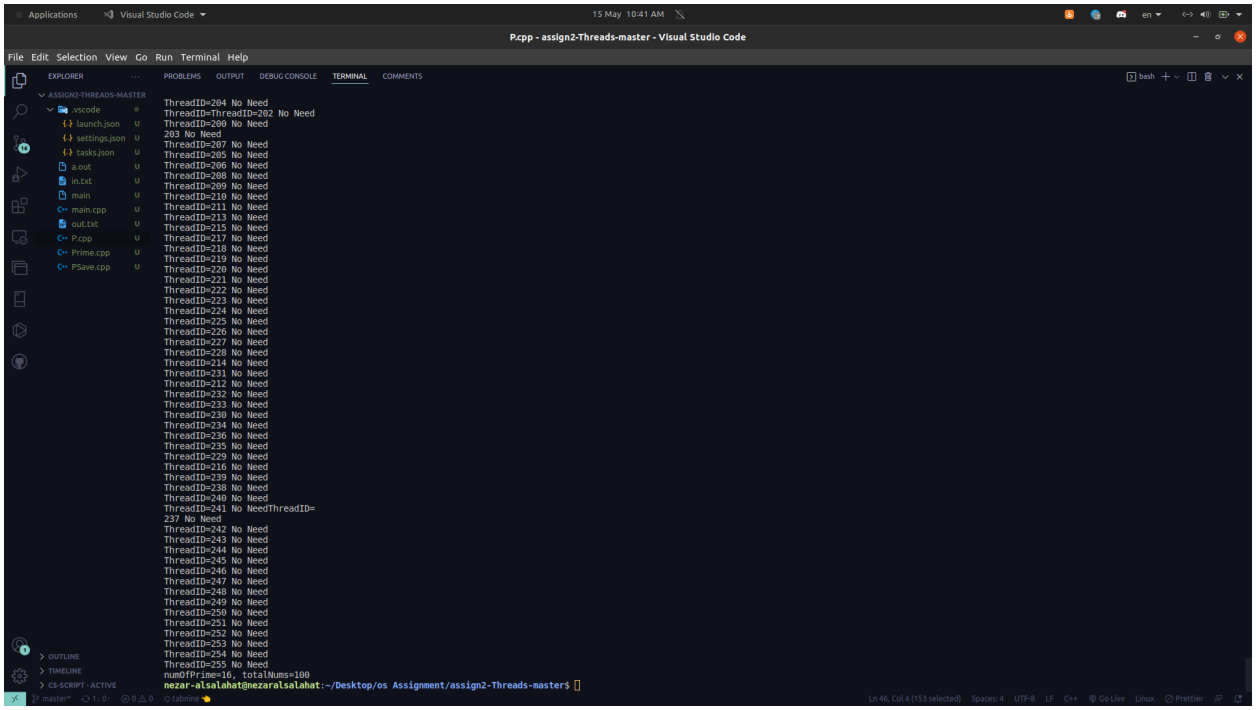
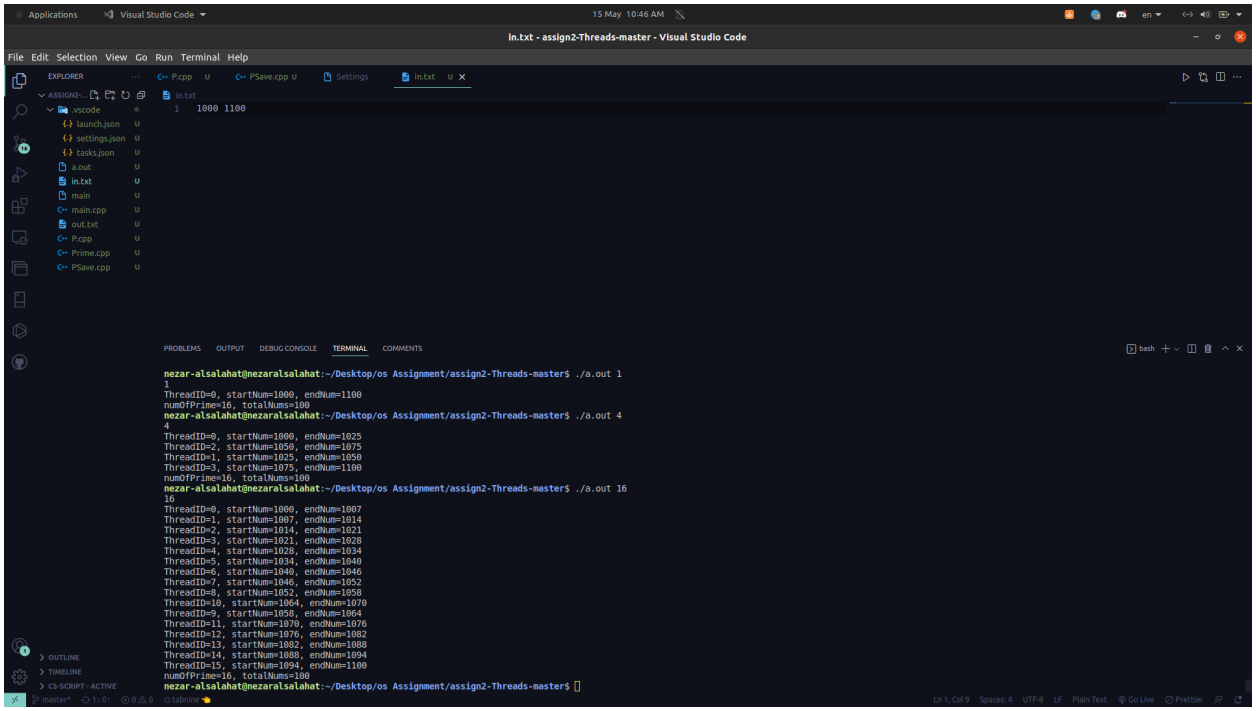
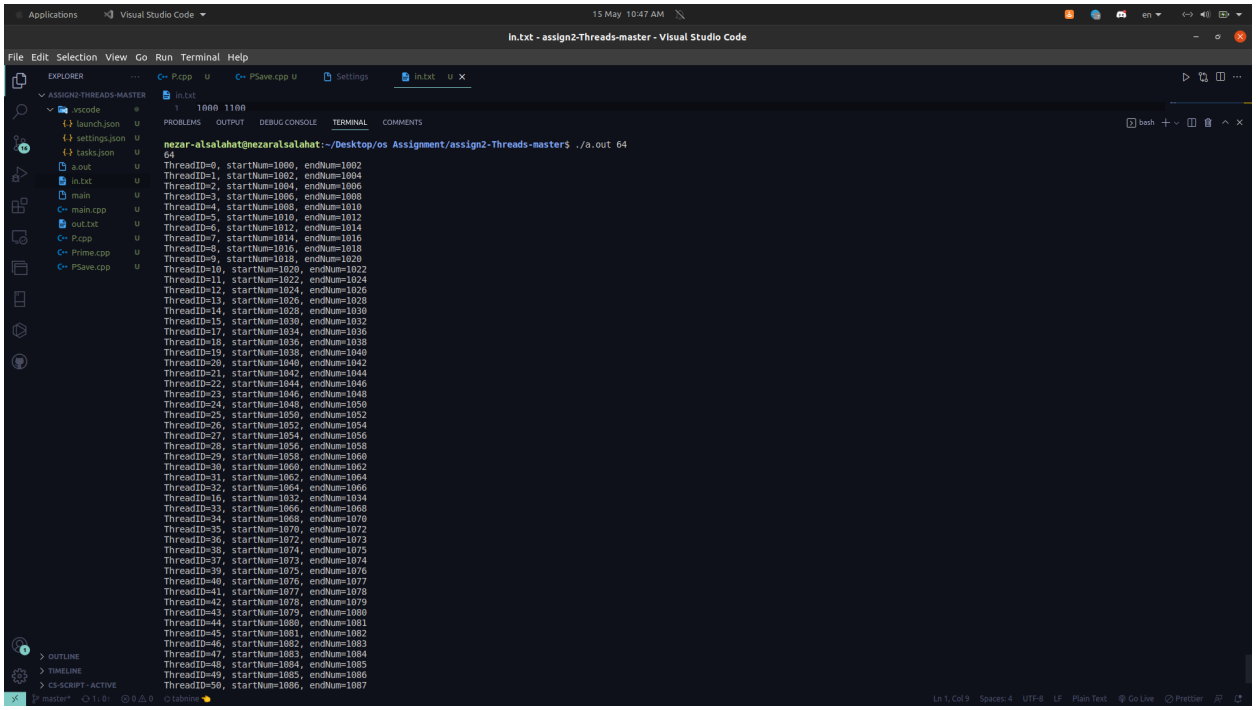
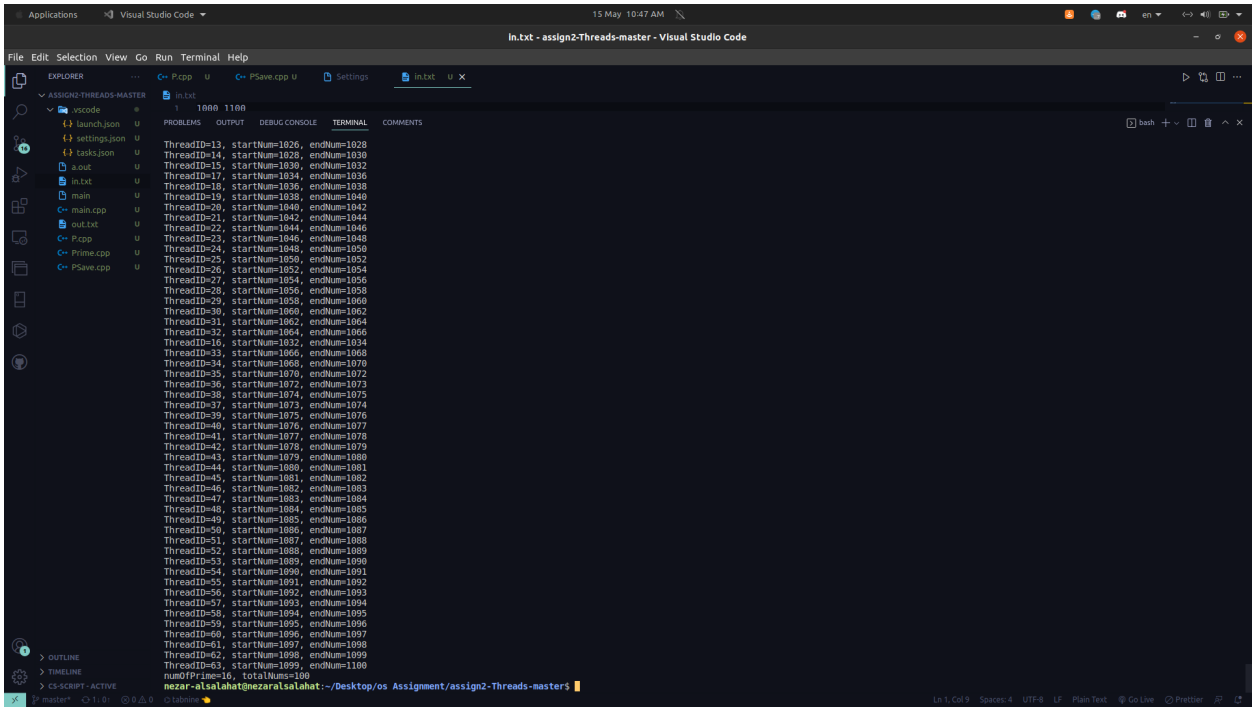
ThreadID=152 No Need
ThreadID=140 No Need
ThreadID=150 No Need
ThreadID=148 No Need
ThreadID=161 No Need
ThreadID=160 No Need
ThreadID=162 No Need
ThreadID=164 No Need
ThreadID=163 No Need
ThreadID=158 No Need
ThreadID=165 No Need
ThreadID=159 No Need
ThreadID=167 No Need
ThreadID=168 No Need
ThreadID=169 No Need
ThreadID=170 No Need
ThreadID=171 No Need
ThreadID=173 No Need
ThreadID=174 No Need
ThreadID=175 No Need
ThreadID=176 No Need
ThreadID=177 No Need
ThreadID=178 No Need
ThreadID=179 No Need
ThreadID=180 No Need
ThreadID=181 No Need
ThreadID=172 No Need
OUTLINE
TIMELINE
CS-SCRIPT - ACTIVE
master*
Ln 46, Col 4 (153 selected)
Spaces: 4
UTF-8
LF
C++
Go Live
Linux
Prettier

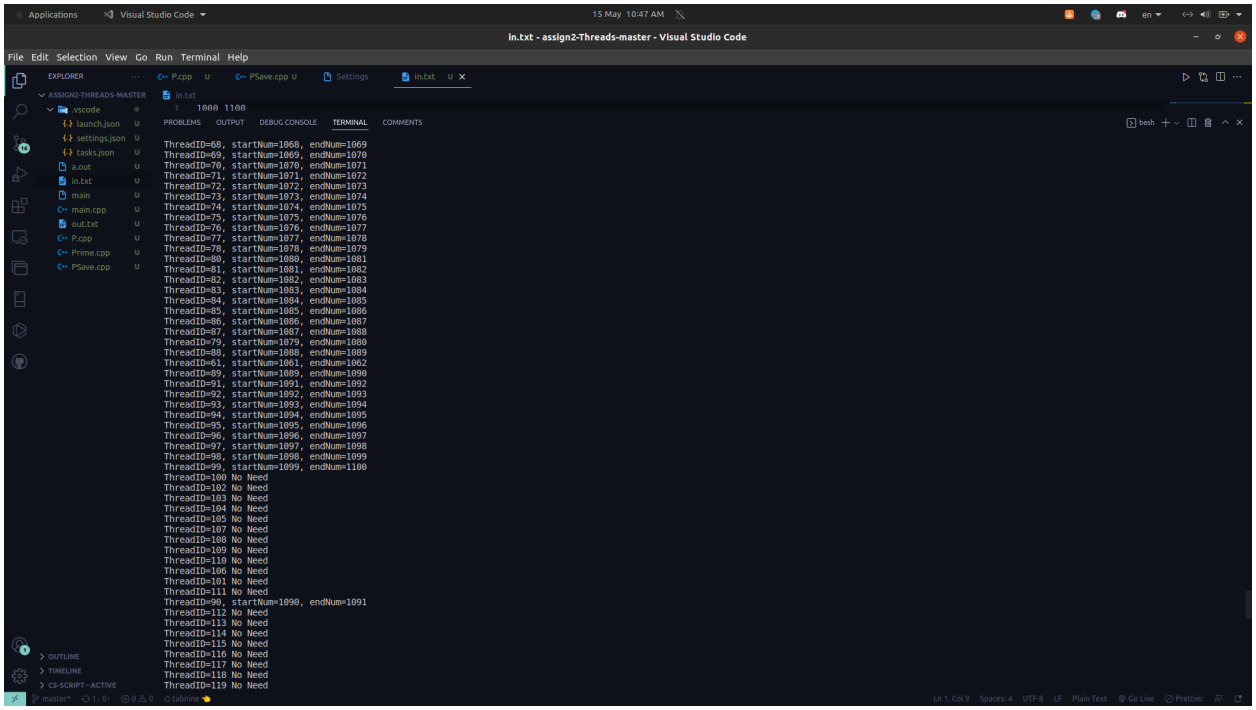

Applications
Visual Studio Code
15 May 10:41 AM
P.cpp - assign2-Threads-master - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS
ASSIGN2-THREADS-MASTER
.vscode
launch.json
settings.json
tasks.json
a.out
in.txt
main
main.cpp
out.txt
P.cpp
Prime.cpp
PSave.cpp
ThreadID=204 No Need
ThreadID=ThreadID=202 No Need
ThreadID=200 No Need
203 No Need
ThreadID=207 No Need
ThreadID=205 No Need
ThreadID=206 No Need
ThreadID=208 No Need
ThreadID=209 No Need
ThreadID=210 No Need
ThreadID=211 No Need
ThreadID=213 No Need
ThreadID=215 No Need
ThreadID=217 No Need
ThreadID=218 No Need
ThreadID=219 No Need
ThreadID=220 No Need
ThreadID=221 No Need
ThreadID=222 No Need
ThreadID=223 No Need
ThreadID=224 No Need
ThreadID=225 No Need
ThreadID=226 No Need
ThreadID=227 No Need
ThreadID=228 No Need
ThreadID=214 No Need
ThreadID=231 No Need
ThreadID=212 No Need
ThreadID=232 No Need
ThreadID=233 No Need
ThreadID=230 No Need
ThreadID=234 No Need
ThreadID=236 No Need
ThreadID=235 No Need
ThreadID=229 No Need
ThreadID=216 No Need
ThreadID=239 No Need
ThreadID=238 No Need
ThreadID=240 No Need
ThreadID=241 No NeedThreadID=
237 No Need
ThreadID=242 No Need
ThreadID=243 No Need
ThreadID=244 No Need
ThreadID=245 No Need
ThreadID=246 No Need
ThreadID=247 No Need
ThreadID=248 No Need
ThreadID=249 No Need
ThreadID=250 No Need
ThreadID=251 No Need
ThreadID=252 No Need
ThreadID=253 No Need
ThreadID=254 No Need
ThreadID=255 No Need
numOfPrime=16, totalNums=100
nezar-alsalahat@nezaralsalahat:~/Desktop/os Assignment/assign2-Threads-master$
OUTLINE
TIMELINE
CS-SCRIPT-ACTIVE

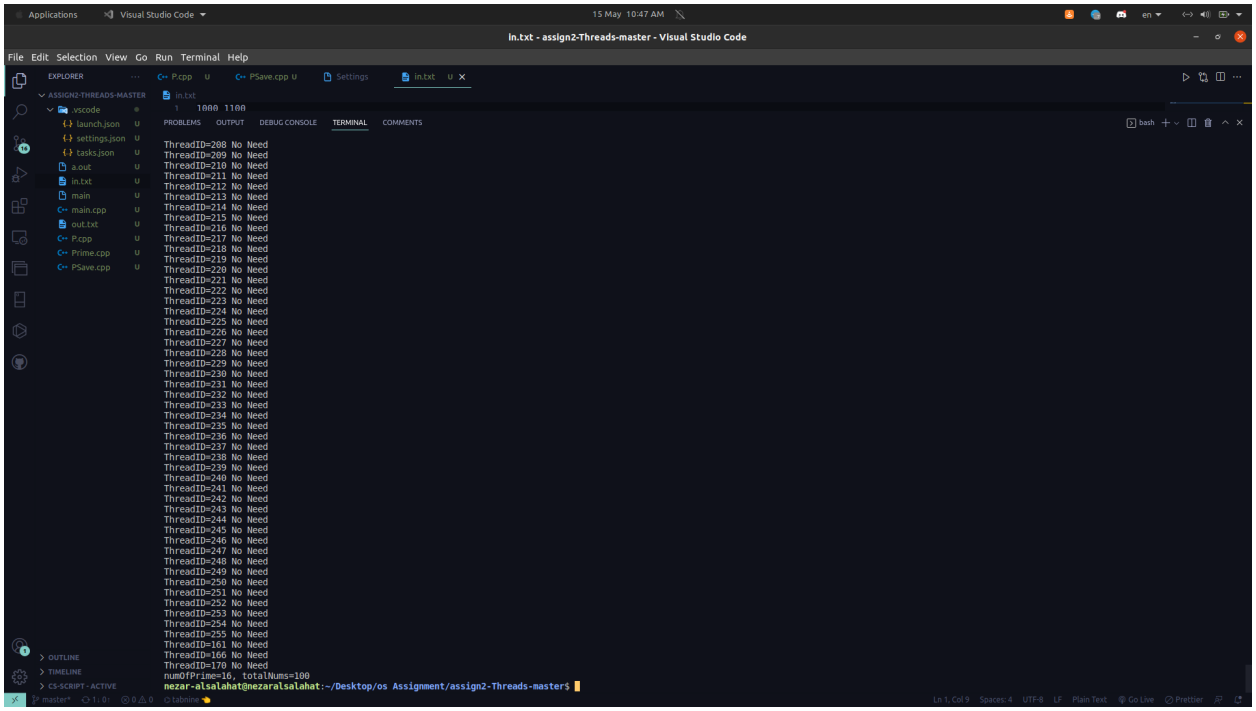
Save


Applications
Visual Studio Code
15 May 10:46 AM
in.txt - assign2-Threads-master - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
P.cpp
PSave.cpp
Settings
in.txt
1 1000 1100
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS
nezar-alsalahat@nezaralsalahat:~/Desktop/os Assignment/assign2-Threads-master$ ./a.out 1
1
ThreadID=0, startNum=1000, endNum=1100
numOfPrime=16, totalNums=100
nezar-alsalahat@nezaralsalahat:~/Desktop/os Assignment/assign2-Threads-master$ ./a.out 4
4
ThreadID=0, startNum=1000, endNum=1025
ThreadID=2, startNum=1050, endNum=1075
ThreadID=1, startNum=1025, endNum=1050
ThreadID=3, startNum=1075, endNum=1100
numOfPrime=16, totalNums=100
nezar-alsalahat@nezaralsalahat:~/Desktop/os Assignment/assign2-Threads-master$ ./a.out 16
16
ThreadID=0, startNum=1000, endNum=1007
ThreadID=1, startNum=1007, endNum=1014
ThreadID=2, startNum=1014, endNum=1021
ThreadID=3, startNum=1021, endNum=1028
ThreadID=4, startNum=1028, endNum=1034
ThreadID=5, startNum=1034, endNum=1040
ThreadID=6, startNum=1040, endNum=1046
ThreadID=7, startNum=1046, endNum=1052
ThreadID=8, startNum=1052, endNum=1058
ThreadID=10, startNum=1064, endNum=1070
ThreadID=9, startNum=1058, endNum=1064
ThreadID=11, startNum=1070, endNum=1076
ThreadID=12, startNum=1076, endNum=1082
ThreadID=13, startNum=1082, endNum=1088
ThreadID=14, startNum=1088, endNum=1094
ThreadID=15, startNum=1094, endNum=1100
numOfPrime=16, totalNums=100
nezar-alsalahat@nezaralsalahat:~/Desktop/os Assignment/assign2-Threads-master$
OUTLINE
TIMELINE
CS-SCRIPT-ACTIVE


Applications
Visual Studio Code
15 May 10:47 AM
en
in.txt - assign2-Threads-master - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
P.cpp U
PSave.cpp U
Settings
in.txt U
ASSIGN2-THREADS-MASTER
in.txt
1000 1100
vscode
launch.json U
settings.json U
tasks.json U
a.out U
in.txt U
main U
main.cpp U
out.txt U
P.cpp U
Prime.cpp U
PSave.cpp U
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS
bash
nezar-alsalahat@nezaralsalahat:~/Desktop/os Assignment/assign2-Threads-master$ ./a.out 64
64
ThreadID=0, startNum=1000, endNum=1002
ThreadID=1, startNum=1002, endNum=1004
ThreadID=2, startNum=1004, endNum=1006
ThreadID=3, startNum=1006, endNum=1008
ThreadID=4, startNum=1008, endNum=1010
ThreadID=5, startNum=1010, endNum=1012
ThreadID=6, startNum=1012, endNum=1014
ThreadID=7, startNum=1014, endNum=1016
ThreadID=8, startNum=1016, endNum=1018
ThreadID=9, startNum=1018, endNum=1020
ThreadID=10, startNum=1020, endNum=1022
ThreadID=11, startNum=1022, endNum=1024
ThreadID=12, startNum=1024, endNum=1026
ThreadID=13, startNum=1026, endNum=1028
ThreadID=14, startNum=1028, endNum=1030
ThreadID=15, startNum=1030, endNum=1032
ThreadID=17, startNum=1034, endNum=1036
ThreadID=18, startNum=1036, endNum=1038
ThreadID=19, startNum=1038, endNum=1040
ThreadID=20, startNum=1040, endNum=1042
ThreadID=21, startNum=1042, endNum=1044
ThreadID=22, startNum=1044, endNum=1046
ThreadID=23, startNum=1046, endNum=1048
ThreadID=24, startNum=1048, endNum=1050
ThreadID=25, startNum=1050, endNum=1052
ThreadID=26, startNum=1052, endNum=1054
ThreadID=27, startNum=1054, endNum=1056
ThreadID=28, startNum=1056, endNum=1058
ThreadID=29, startNum=1058, endNum=1060
ThreadID=30, startNum=1060, endNum=1062
ThreadID=31, startNum=1062, endNum=1064
ThreadID=32, startNum=1064, endNum=1066
ThreadID=16, startNum=1032, endNum=1034
ThreadID=33, startNum=1066, endNum=1068
ThreadID=34, startNum=1068, endNum=1070
ThreadID=35, startNum=1070, endNum=1072
ThreadID=36, startNum=1072, endNum=1073
ThreadID=38, startNum=1074, endNum=1075
ThreadID=37, startNum=1073, endNum=1074
ThreadID=39, startNum=1075, endNum=1076
ThreadID=40, startNum=1076, endNum=1077
ThreadID=41, startNum=1077, endNum=1078
ThreadID=42, startNum=1078, endNum=1079
ThreadID=43, startNum=1079, endNum=1080
ThreadID=44, startNum=1080, endNum=1081
ThreadID=45, startNum=1081, endNum=1082
ThreadID=46, startNum=1082, endNum=1083
ThreadID=47, startNum=1083, endNum=1084
ThreadID=48, startNum=1084, endNum=1085
ThreadID=49, startNum=1085, endNum=1086
ThreadID=50, startNum=1086, endNum=1087
OUTLINE
TIMELINE
CS-SCRIPT - ACTIVE
master*
tabnine
Ln 1, Col 9
Spaces: 4
UTF-8
LF
Plain Text
Go Live
Prettier


Applications
Visual Studio Code
15 May 10:47 AM
en
in.txt - assign2-Threads-master - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
P.cpp U
PSave.cpp U
Settings
in.txt U
ASSIGN2-THREADS-MASTER
in.txt
1000 1100
vscode
launch.json U
settings.json U
tasks.json U
a.out U
in.txt U
main U
main.cpp U
out.txt U
P.cpp U
Prime.cpp U
PSave.cpp U
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS
bash
ThreadID=13, startNum=1026, endNum=1028
ThreadID=14, startNum=1028, endNum=1030
ThreadID=15, startNum=1030, endNum=1032
ThreadID=17, startNum=1034, endNum=1036
ThreadID=18, startNum=1036, endNum=1038
ThreadID=19, startNum=1038, endNum=1040
ThreadID=20, startNum=1040, endNum=1042
ThreadID=21, startNum=1042, endNum=1044
ThreadID=22, startNum=1044, endNum=1046
ThreadID=23, startNum=1046, endNum=1048
ThreadID=24, startNum=1048, endNum=1050
ThreadID=25, startNum=1050, endNum=1052
ThreadID=26, startNum=1052, endNum=1054
ThreadID=27, startNum=1054, endNum=1056
ThreadID=28, startNum=1056, endNum=1058
ThreadID=29, startNum=1058, endNum=1060
ThreadID=30, startNum=1060, endNum=1062
ThreadID=31, startNum=1062, endNum=1064
ThreadID=32, startNum=1064, endNum=1066
ThreadID=16, startNum=1032, endNum=1034
ThreadID=33, startNum=1066, endNum=1068
ThreadID=34, startNum=1068, endNum=1070
ThreadID=35, startNum=1070, endNum=1072
ThreadID=36, startNum=1072, endNum=1073
ThreadID=38, startNum=1074, endNum=1075
ThreadID=37, startNum=1073, endNum=1074
ThreadID=39, startNum=1075, endNum=1076
ThreadID=40, startNum=1076, endNum=1077
ThreadID=41, startNum=1077, endNum=1078
ThreadID=42, startNum=1078, endNum=1079
ThreadID=43, startNum=1079, endNum=1080
ThreadID=44, startNum=1080, endNum=1081
ThreadID=45, startNum=1081, endNum=1082
ThreadID=46, startNum=1082, endNum=1083
ThreadID=47, startNum=1083, endNum=1084
ThreadID=48, startNum=1084, endNum=1085
ThreadID=49, startNum=1085, endNum=1086
ThreadID=50, startNum=1086, endNum=1087
ThreadID=51, startNum=1087, endNum=1088
ThreadID=52, startNum=1088, endNum=1089
ThreadID=53, startNum=1089, endNum=1090
ThreadID=54, startNum=1090, endNum=1091
ThreadID=55, startNum=1091, endNum=1092
ThreadID=56, startNum=1092, endNum=1093
ThreadID=57, startNum=1093, endNum=1094
ThreadID=58, startNum=1094, endNum=1095
ThreadID=59, startNum=1095, endNum=1096
ThreadID=60, startNum=1096, endNum=1097
ThreadID=61, startNum=1097, endNum=1098
ThreadID=62, startNum=1098, endNum=1099
ThreadID=63, startNum=1099, endNum=1100
numOfPrime=16, totalNum=100
nezar-alsalahat@nezaralsalahat:~/Desktop/os Assignment/assign2-Threads-master$
OUTLINE
TIMELINE
CS-SCRIPT - ACTIVE
master*
tabnine
Ln 1, Col 9
Spaces: 4
UTF-8
LF
Plain Text
Go Live
Prettier





**note : 1024 my terminal can’t show all

Task 5 :

	Test1	Test2	Test3
T=1	real 0m0.010s user 0m0.006s sys 0m0.004s	real 0m0.006s user 0m0.001s sys 0m0.006s	real 0m0.009s user 0m0.004s sys 0m0.005s
T=4	real 0m0.010s user 0m0.003s sys 0m0.008s	real 0m0.010s user 0m0.002s sys 0m0.010s	real 0m0.010s user 0m0.007s sys 0m0.004s
T=16	real 0m0.011s user 0m0.009s sys 0m0.006s	real 0m0.009s user 0m0.006s sys 0m0.006s	real 0m0.010s user 0m0.007s sys 0m0.006s
T=64	real 0m0.008s user 0m0.004s sys 0m0.007s	real 0m0.017s user 0m0.007s sys 0m0.019s	real 0m0.010s user 0m0.003s sys 0m0.009s
T=256	real 0m0.042s user 0m0.018s sys 0m0.039s	real 0m0.021s user 0m0.001s sys 0m0.028s	real 0m0.016s user 0m0.008s sys 0m0.015s
T=1024	real 0m0.051s user 0m0.030s sys 0m0.043s	real 0m0.071s user 0m0.023s sys 0m0.082s	real 0m0.084s user 0m0.022s sys 0m0.087s

Conclusion:
our machine should have between 1 and 4 cores with 1 hyper-thread each or something like these numbers,
in our tests we noticed that whenever we use more than 4 threads we don’t see any improvement on the execution time, and sometimes the time increases instead(the law of diminishing)