

GDB

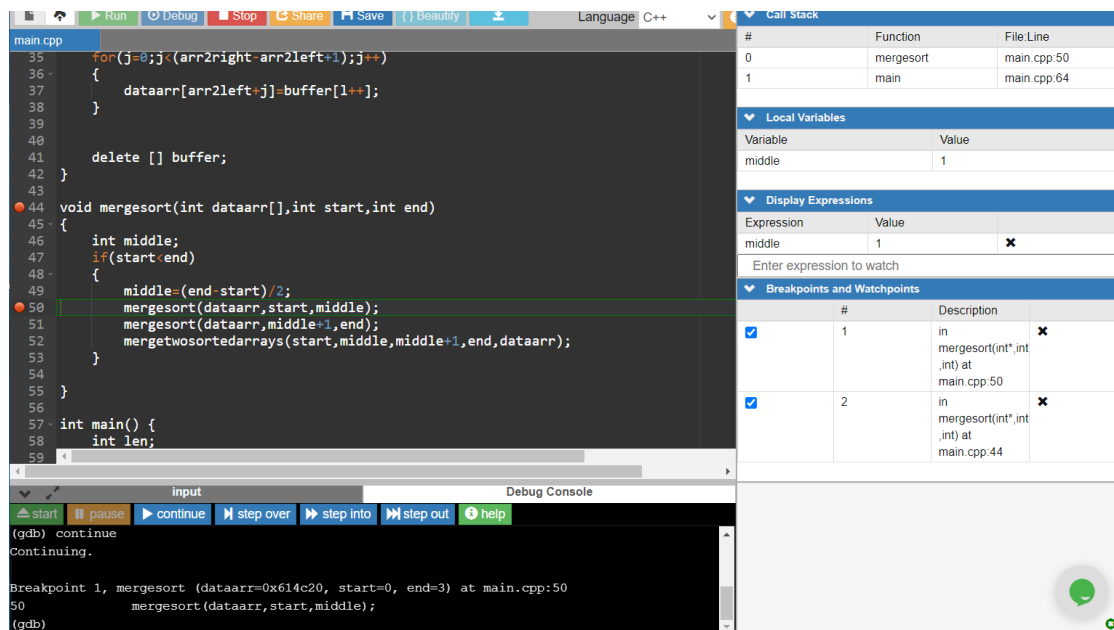
- Used to debug (remove bug from code)
- has powerful tools that help in debugging such as Breakpoints, variable tracker , Function Stack

Usage Of GDB (online gdb can perform this using UI)

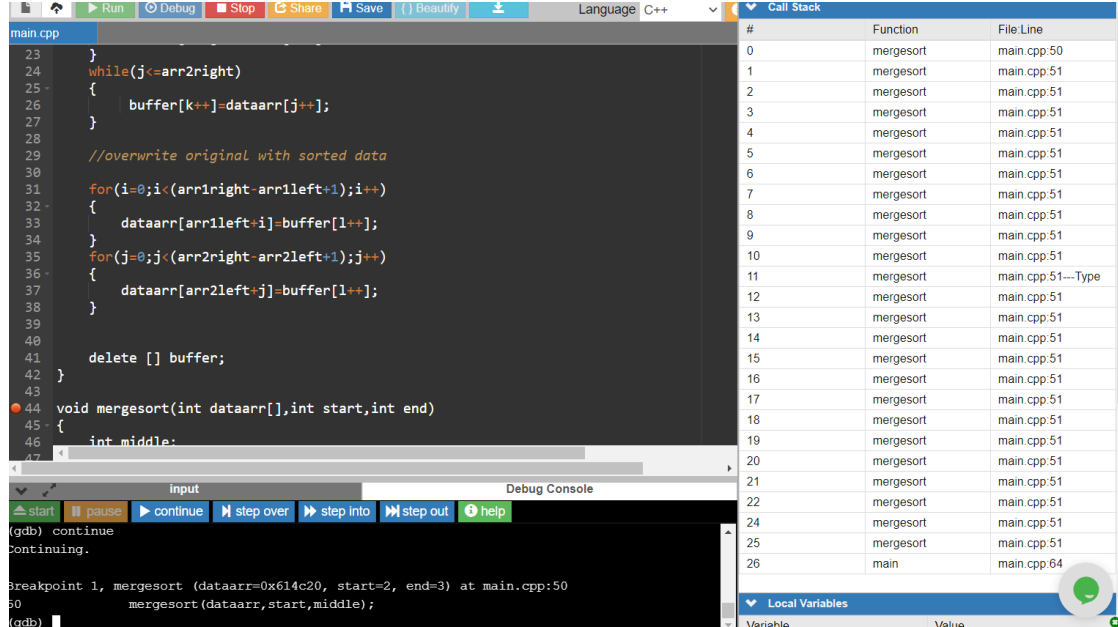
- break-point syntax : **b Line_Number**
- to run the code : **run**
- Print the value of any variable : **Print variable_name** or **p variable_name**
- Execute function line by line stepping into it : **step into**
- Execute program line by line but don't go inside function call : **step over**
- continues the function (program) until the next break point is occurred: **C** or **cont** or **continue**

Debugging the merge sort:

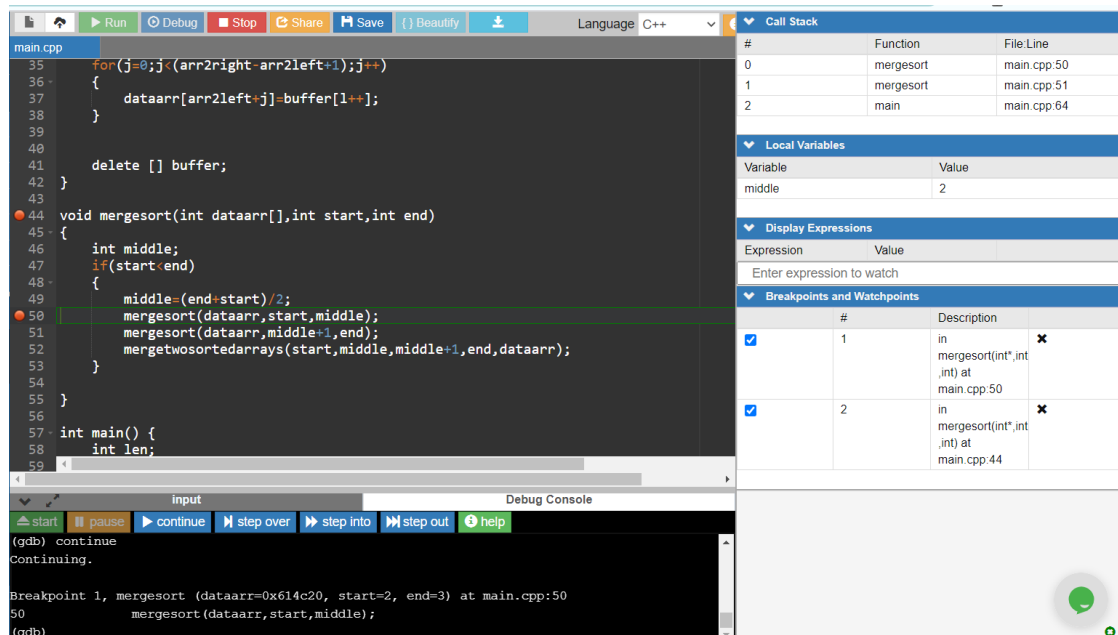
- here mid = 2 in the start where array length is 4 (since even it can be 1 or 2)(since index is [0 ,3])



- But merge sort goes in infinite loop : mid switching from 0 and 1



- lets change $mid = (end + start)$ since otherwise its goes into infinite loop since the way end and start and valued



- bug solved program terminated succesfully

main.cpp

41 delete [] buffer;

42 }

43

44 void mergesort(int dataarr[],int start,int end)

45 {

46 int middle;

47 if(start<end)

48 {

49 middle=(end+start)/2;

50 mergesort(dataarr,start,middle);

51 mergesort(dataarr,middle+1,end);

52 mergetwosortedarrays(start,middle,middle+1,end,dataarr);

53 }

54 }

55 }

56

57 int main() {

58 int len;

59 std::cin>>len;

60 int *dataarr = new int[len];

61 for(int i=0;i<len;i++)

62 std::cin>>dataarr[i];

63

64 mergesort(dataarr,0,len-1);

65

#

Function

File Line

Local Variables

Variable

Value

Display Expressions

Expression

Value

Enter expression to watch

Breakpoints and Watchpoints

#

Description

1

in mergesort(int*,int ,int) at main.cpp:50

2

in mergesort(int*,int ,int) at main.cpp:44

start

pause

continue

step over

step into

step out

help

Breakpoint 2, mergesort (dataarr=0x614c20, start=3, end=3) at main.cpp:47

47 if(start<end)

(gdb) continue

Continuing.

1 2 3 5 [Inferior 1 (process 1976) exited normally]

(gdb)