Tutorial - 12

In this tutorial, you will design, debug and execute a few OpenACC programs, and analyze the compiler outputs.

1. Compile and execute the following program. Analyze the output of the *pgcc* compiler. Run the program as ./a.out 10. Analyze the output with *async* clause added to the first parallel region.

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

int main(int argc, char* argv[])
{
  int ngangs = 1;

  if (argc == 2)
    ngangs = atoi(argv[1]);
  else
    {
      printf(" Run the program as ./a.out 10");
      return 1;
    }

  printf("\n ngangs = %d", ngangs);

#pragma acc parallel num_gangs(ngangs)
  {
    printf(" Hello world \n");
    printf(" Bye world \n");
  }

  printf("Host \n");

#pragma acc parallel num_gangs(ngangs/2)
  printf("Second pragma \n");

  return 0;
}
```

2. Find and fix error(s) in the following program fragment trying to find a number in an integer array. After the code is working, improve parallelism in the code.

```
#pragma acc parallel
  for (int i = 0; i < N; i++)
    if (numbers[i] == mynumber) break;

  if (i != N) printf("Number not found \n");
  else printf("Number found at location %d \n", i);
```