BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI (RAJ.)

Second Semester 2017-18 CS F111 Computer Programming

LABORATORY SESSION #9 SOLUTIONS

(Pointers; Multi-dimensional Arrays)

1) When array is passed as argument, sizeof treats it as pointer and prints only 8 irrespective of it being a 1D or a 2D array

2)
a)When only few elements of array are initialized at the time of declaration, remaining elements are assigned 0.

b) When a pointer is used as an array, it can have negative index as long as you are sure, its within the bounds of the array.

c) Compiler will not allows us to add, multiply or divide two pointers of same type or subtract two pointers of different types. However, it allows to subtract two pointers of same type (although belonging to two different arrays).

3)

```
int main()
{
 int rows, cols;
 scanf("%d %d\n", &rows, &cols);
 printf(" %d %d", rows, cols);
 int arr[rows][cols], num_tr, max_tr[rows], deposits[rows]  ;
 printf("\nAccept the data:\n");
 for(int i=0;i<rows;i++)
 {
    for(int j=0; j<cols;j++)
       {scanf("%d ", &arr[i][j]);
       printf(" %d ", arr[i][j]);
       }
  deposits[i] = compute_max_deposits(arr[i], cols);
  max_tr[i] = compute_max_trans(arr[i], cols);
  printf("%d %d\n", deposits[i], max_tr[i]);
 }
// Compute maximum deposits branch

 int max = deposits[0];int b_no=0;
 for(int i=1; i< rows; i++)
   if(deposits[i]> max)
   {
     b_no = i;
     max = deposits[i];
   }
 printf("Branch number with max deposits  %d is %d\n",max, b_no);
 // Compute the branch number with max transactions(abs value)

 max = max_tr[0], b_no =0;
 for(int i=1; i< rows; i++)
   if(max_tr[i]> max)
   {
     b_no = i;
     max = max_tr[i];
   }
 printf("Branch number with max value (abs) of transaction %d is %d\n",max, b_no);
return 0;
}
```

b) The entire row is passed as arr[i].

```
int compute_max_deposits(int row[], int size)
{
   int max=0;
   for(int i=0;i<size;i++)
     if(row[i]>0)
         max += row[i];
   return max;
}
```

c) A separate 1D array **max_tr of** of size NUM stores the max. transaction values for that branch (absolute values only). A one line function my_abs() is defined as follows:

```
int my_abs(int a)
{
  return (a>0?a:-a);
}

int compute_max_trans(int row[], int size)
{
  int max = my_abs(row[0]);
  for(int i=1;i<size;i++)
     if(my_abs(row[i]) > max)
    max = my_abs(row[i]);
  return max;
}
```