PROGRAMMING LAB ASSIGNMENT – 11

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ENROLLMENT NUMBER- 2020ITB028

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3 RD SEMESTER, 2 ND YEAR

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Q1) Write short notes on opendir(), readdir() and closedir().

a) opendir():

opendir - open a directory

SYNTAX:

#include <dirent.h>

DIR *opendir(const char *_dirname_);

DESCRIPTION:

The _opendir_() function shall open a directory stream corresponding to the directory named by the _dirname_ argument. The directory stream is positioned at the first entry. If the type DIR is implemented using a file descriptor, applications shall only be able to open up to a total of {OPEN_MAX} files and directories.

RETURN VALUE:

Upon successful completion, _opendir_() shall return a pointer to an object of type DIR. Otherwise, a null pointer shall be returned and _errno_ set to indicate the error.

b) readdir():

SYNTAX:

#include <sys/types.h>

#include <dirent.h>

struct dirent *readdir(DIR *_dirp_);

int readdir_r(DIR *_dirp_, struct dirent *_entry_, struct dirent **_result_);

DESCRIPTION

The type DIR, which is defined in the header *<dirent.h>*, represents a *directory stream*, which is an ordered sequence of all the directory entries in a particular directory. Directory entries represent files; files may be removed from a directory or added to a directory asynchronously to the operation of *readdir()*.

RETURN VALUE

Upon successful completion, *readdir()* returns a pointer to an object of type struct dirent. When an error is encountered, a null pointer is returned and *errno* is set to indicate the error. When the end of the directory is encountered, a null pointer is returned and *errno* is not changed.

If successful, the *readdir_r()* function returns zero. Otherwise, an error number is returned to indicate the error.

c) closedir():

The closedir() function closes the directory stream indicated by *dirp*. It frees the buffer that readdir() uses when reading the directory stream.

A file descriptor is used for type DIR; closedir() closes the file descriptor.

SYNTAX:

```
#include <sys/types.h>
#include <dirent.h>

int closedir(DIR *dirp);
```

DESCRIPTION

The *closedir*() function shall close the directory stream referred to by the argument *dirp*. Upon return, the value of *dirp* may no longer point to an accessible object of the type DIR. If a file descriptor is used to implement type DIR, that file descriptor shall be closed.

RETURN VALUE:

0

closedir() was successful.

-1

closedir() was not successful. The *errno* global variable is set to indicate the error.

Q2) Write a program using these functions to open and list out the content of a given directory (like "ls" in Unix/Linux systems) of your system. Take directory name as user input.

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


   int main (int argc, char *argv[])
   {
      struct dirent *pDirent;
      DIR *pDir;

      // Ensure correct argument count.

      if (argc != 2)
      {
```

```
    printf ("Usage: testprog <dirname>\n");
    return 1;
  }

  // Ensure we can open directory.

  pDir = opendir (argv[1]);
  if (pDir == NULL) {
    printf ("Cannot open directory '%s'\n", argv[1]);
    return 1;
  }

  // Process each entry.

  while ((pDirent = readdir(pDir)) != NULL) {
    printf ("[%s]\n", pDirent->d_name);
  }

  // Close directory and exit.

  closedir (pDir);
  return 0;
}
```

OUTPUT:

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\Dell\Desktop\Programming lab> wsl
darkdevil@DESKTOP-IN4MDM4:/mnt/c/Users/Dell/Desktop/Programming lab$ gcc ass11_2.c
darkdevil@DESKTOP-IN4MDM4:/mnt/c/Users/Dell/Desktop/Programming lab$ ./a.out .
[.]
[..]
[.git]
[.vscode]
[a.exe]
[a.out]
[ass10_1.c]
[ass10_1.exe]
[ass11_2.c]
[ass1_1.c]
[ass1_1.exe]
[ass1_2.c]
[ass1_2.exe]
[ass1_3.c]
[ass1_3.exe]
[ass2_1.c]
[ass2_1.exe]
[ass2_2.c]
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[ITB028_PLAB_ASS8(A).pdf]
[ITB028_PLAB_ASS8.pdf]
[ITB028_PLAB_ASS9.docx]
[ITB028_PLAB_ASS9.pdf]
[~$B028_PLAB_ASS9.docx]
darkdevil@DESKTOP-IN4MDM4:/mnt/c/Users/Dell/Desktop/Programming lab$
```