

PRINCIPLES OF PROGRAMMING LANGUAGES

Assignment II

Due Date: 26 October 2018

Answer all the questions. Marks are given alongside the questions.

- (3 Marks)** Write functions called `print_arr()` and `param_test()` in C, C++ and Java for the following: in the main program, initialise an array of 10 floating point numbers to any values you chose. `param_test()` adds 5 to the first element of the array passed as its parameter. `print_arr()` prints the elements of the array passed as its parameter.
 - The actual and formal parameters are arrays of 10 floating point numbers. Print the contents of the array before and after calling `param_test()` function.
 - The actual parameter is `float *` while the formal parameter in both the functions is an array of 10 floating point numbers. Print the contents of the array before and after calling `param_test()` function.
 - The actual parameter is an array of 10 floating point numbers but the formal parameter in both the functions is `float *` type. Print the contents of the array before and after calling `param_test()` function.
 - The actual and formal parameters are both `float *`. Print the contents of the array before and after calling `param_test()` function.

In other words, the prototypes of the functions are:

```
void param_test(float [10]);  
void print_arr(float [10]);
```

for the first two cases while they are:

```
void param_test(float *);  
void print_arr(float *);
```

for the third and fourth cases. Analyse the answers that you get.

- (4 Marks)** Repeat the above question with a `float [10][10]` 2-D array and `float **` data types. Analyse what happens.
- (8 Marks)** Read about `qsort()` in C language and, using a short program, analyse its parameter passing including restrictions and special behaviours if any. Write a small program in Java showing how to throw, raise and catch exceptions. Analyse the parameter passing mechanism for exceptions in Java. Use your code snippet to support your arguments.
- (5 Marks)** Search the WWW to describe **coroutines**. Explain clearly with an example how CIP and CEP may be used to implement coroutines. Find which languages support(ed) coroutines.