Indian Institute of Information Technology, Allahabad
Department of Information Technology

Program Code & Semester: B.Tech (IT)- 4^{th} Semester.

Paper Title: Principles of Programming
Tutorial and Practical - Set 3

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1. Data Type [Tutorial] - What are the ways to identify the supported order (row or column major order) by a language.
2. Data Type [Practical] - Continuing the first task, identify the order in C, C++, Python, JAVA and Golang.
3. Parser [Tutorial] - Consider the following grammar
   A $->$ B + C | De
   B $->$ S + f
   D $->$ e | epsilon
   C $->$ a
   S $->$ A | a

   Analyse the possibility of conflicts.

   - Shift/Reduce conflict
   - Reduce/Reduce Conflict
   - First/First Conflict
   - First/Follow Conflict
4. Descriptor [Tutorial] - Present and analyze the multi-dimensional descriptor?
5. Switch Statement [Tutorial] - What are the different ways to implement the *switch* statement only using if and Goto.
6. Union [Tutorial and Practical] - Will Union in the following program really save space. Do the analysis.

```
#include <stdio.h>
#include <string.h>
union Data {
int i;
float f;
char str[20];
};
int main() {
union Data data;
data.i = 10;
data.f = 220.5;
strcpy(data.str, "C Programming");
printf("data.i : %d\n", data.i);
printf("data.f : %f\n", data.f);
printf("data.str : %s\n", data.str);
return 0;
}
```

   Thanks to https://www.tutorialspoint.com/cprogramming/c_unions.htm
7. IEEE 754 [Tutorial] - Analyse the Single and Double Precision floating point with an example.