Lab Report - 03

SE1012 – Programming methodology

Lab 03

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Activity 01 :

```c
#include <stdio.h>

int main() {
    // Constants
    const double GRAVITY = 9.80;        // Gravitational constant in m/s^2
    const double EFFICIENCY = 0.9;      // 90% efficiency
    const double WATER_DENSITY = 1000; // Mass of 1 cubic meter of water in kg

    // Variables
    double height;    // Height of the dam in meters
    double flowRate;  // Flow rate in cubic meters per second
    double powerMW;   // Power generated in megawatts

    // Prompt user for input
    printf("Enter the height of the dam (in meters): ");
    scanf("%lf", &height);
    printf("Enter the flow rate of water (in cubic meters per second): ");
    scanf("%lf", &flowRate);

    // Calculate power in megawatts
    powerMW = EFFICIENCY * WATER_DENSITY * flowRate * GRAVITY * height / 1e6;

    // Display result
    printf("Predicted power generated by the hydroelectric dam: %.2f megawatts.\n", powerMW);

    return 0; // End of program
}
~
```

```
it23426108@MLBVDI-LNN-0003:~$ vim lab3.c
it23426108@MLBVDI-LNN-0003:~$ gcc lab3.c -o lab3
it23426108@MLBVDI-LNN-0003:~$ ./lab3
Enter the height of the dam (in meters): 50
Enter the flow rate of water (in cubic meters per second): 200
Predicted power generated by the hydroelectric dam: 88.20 megawatts.
it23426108@MLBVDI-LNN-0003:~$
```

Activity 02:

```
it23426108@MLBVDI-LNN-0003:~$ vim lab0030.c
it23426108@MLBVDI-LNN-0003:~$ gcc lab0030.c -o lab003
it23426108@MLBVDI-LNN-0003:~$ ./lab003
Enter score for section 1: 4
Enter score for section 2: 9
Enter score for section 3: 20
Fail
it23426108@MLBVDI-LNN-0003:~$
```

```c
#include <stdio.h>

int main() {
    // Declare variables for section scores
    int section1, section2, section3;

    // Input scores
    printf("Enter score for section 1: ");
    scanf("%d", &section1);

    printf("Enter score for section 2: ");
    scanf("%d", &section2);

    printf("Enter score for section 3: ");
    scanf("%d", &section3);

    // Calculate average score
    float average = (section1 + section2 + section3) / 3.0;

    // Check pass conditions
    if (section1 >= 70 && section2 >= 70 && section3 >= 70 && average >= 75) {
        printf("Pass\n");
    } else {
        printf("Fail\n");
    }

    return 0;
}
```