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| **EXPERIMENT REPORT** *of* *Digital Signal Processing* | | | |
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| ***TYPICAL DIGITAL SIGNALS: GENERATION AND ITS FREQUENCY ANALYSIS BY USING MATLAB*** | | | |
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| SUBMITTED BY | | | |
|  | | | |
|  | ***NAME1*** | *ID1* |  |
|  | ***NAME2*** | *ID2* |  |
|  | ***NAME3*** | *ID3* |  |
|  | ***NAME4*** | *ID4* |  |
|  | ***NAME5*** | *ID5* |  |
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|  | | | |
| ***Professor He Peiyu*** | | | |
| *School of Electronic and Information Engineering, Sichuan University* | | | |
| *November, 2015* | | | |

# Generation of Typical Signals

## Unit Sampling Sequence

### Signal Expression

### MATLAB Codes (*with Notes*)

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### Simulation Results and Illustrations

## Unit Step Sequence

### Signal Expression

### MATLAB Codes (*with Notes*)

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### Simulation Results and Illustrations

## Real Exponential Sequence

### Signal Expression

### MATLAB Codes (*with Notes*)

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### Simulation Results and Illustrations

## Complex Exponential Sequence

### Signal Expression

### MATLAB Codes (*with Notes*)

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### Simulation Results and Illustrations

## Sinusoidal Sequence

### Signal Expression

### MATLAB Codes (*with Notes*)

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### Simulation Results and Illustrations

## Summary and Discussion

# Frequency Analysis

## Discrete Time Fourier Transform (DTFT)

### Concept of DTFT

### Signal Expression in Frequency Domain

### MATLAB Codes (*with Notes*)

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### Simulation Results and Illustration

## Discrete Fourier Transform (DFT)

### Concept of DFT

### MATLAB Codes (*with Notes and Different Signal Length*)

#### Unit Sampling Sequence

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#### Unit Step Sequence

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#### Real Exponential Sequence

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#### Complex Exponential Sequence

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#### Sinusoidal Sequence

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### Simulation Results and Illustrations (*with Different Signal Length*)

## Summary and Discussion

# Speech Signal Analysis

## MATLAB Codes (*with Notes*)

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## Simulation Results and Illustrations (*both Male and Female Speech Signals*)

## Summary and Discussion

# Additional Tasks

## Plot the Complex Exponential Sequence in 3-D

### MATLAB Codes (*with Notes*)

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### Simulation Results and Illustration (*with Different*)

### Summary and Discussion

## Realize the DFT

### MATLAB Codes (*with Notes*)

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### Simulation Results and Illustrations

### Summary and Discussion

## Compare the performance of DFT realized above and FFT

### MATLAB Codes (*with Notes*)

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### Simulation Results and Illustrations

### Summary and Discussion

# Experience and Overview