Computer Mathematics

Week 2 Quiz

(if you use a calculator, please use it <u>only</u> in <u>decimal</u> mode)

1. Convert the following numbers between hexadecimal and octal:

    i) 10_8 $(\underline{\hspace{4cm}}_2)$ = $\underline{\hspace{3cm}}_{16}$

    ii) 10_{16} $(\underline{\hspace{4cm}}_2)$ = $\underline{\hspace{3cm}}_8$

    iii) 17_8 $(\underline{\hspace{4cm}}_2)$ = $\underline{\hspace{3cm}}_{16}$

    iv) 17_{16} $(\underline{\hspace{4cm}}_2)$ = $\underline{\hspace{3cm}}_8$

    v) ACD_{16} $(\underline{\hspace{4cm}}_2)$ = $\underline{\hspace{3cm}}_8$

    vi) $FFFF_{16}$ $(\underline{\hspace{4cm}}_2)$ = $\underline{\hspace{3cm}}_8$

2. Convert the following numbers into decimal:

    i) 10.1_8 = $\underline{\hspace{4cm}}_{10}$

    ii) 20.2_8 = $\underline{\hspace{4cm}}_{10}$

    iii) 10.1_{16} = $\underline{\hspace{4cm}}_{10}$

    iv) 20.2_{16} = $\underline{\hspace{4cm}}_{10}$

    v) 377_8 = $\underline{\hspace{4cm}}_{10}$

    vi) FF_{16} = $\underline{\hspace{4cm}}_{10}$

3. Fill in the blanks...

There are $\underline{\hspace{2cm}}$ binary digits in a 16-bit word.

There are $\underline{\hspace{2cm}}$ hexadecimal digits in a 64-bit word.

There are $\underline{\hspace{2cm}}$ octal digits in a 32-bit word.

There are $\underline{\hspace{2cm}}$ octal digits in a 6-digit hexadecimal word.

There are $\underline{\hspace{2cm}}$ decimal digits in a 4-digit hexadecimal word.

4. Convert the following numbers into binary and hexadecimal:

    i) 64.5_{10} = $\underline{\hspace{4cm}}_2$ = $\underline{\hspace{2cm}}_{16}$

    ii) 225.25_{10} = $\underline{\hspace{4cm}}_2$ = $\underline{\hspace{2cm}}_{16}$

    iii) 42.125_{10} = $\underline{\hspace{4cm}}_2$ = $\underline{\hspace{2cm}}_{16}$

    iv) 10.1_{10} = $\underline{\hspace{4cm}}_2$ = $\underline{\hspace{2cm}}_{16}$

Are there any issues when storing decimal real numbers in a computer?

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5. Convert the following numbers between hexadecimal and octal:

i) 10_8 $(\underline{\hspace{5cm}}_2)$ = $\underline{\hspace{3cm}}_{16}$

ii) 10_{16} $(\underline{\hspace{5cm}}_2)$ = $\underline{\hspace{3cm}}_8$

iii) 17_8 $(\underline{\hspace{5cm}}_2)$ = $\underline{\hspace{3cm}}_{16}$

iv) 17_{16} $(\underline{\hspace{5cm}}_2)$ = $\underline{\hspace{3cm}}_8$

v) ACD_{16} $(\underline{\hspace{5cm}}_2)$ = $\underline{\hspace{3cm}}_8$

vi) $FFFF_{16}$ $(\underline{\hspace{5cm}}_2)$ = $\underline{\hspace{3cm}}_8$

6. Convert the following numbers into decimal:

i) 10.1_8 = $\underline{\hspace{5cm}}_{10}$

ii) 20.2_8 = $\underline{\hspace{5cm}}_{10}$

iii) 10.1_{16} = $\underline{\hspace{5cm}}_{10}$

iv) 20.2_{16} = $\underline{\hspace{5cm}}_{10}$

v) 377_8 = $\underline{\hspace{5cm}}_{10}$

vi) FF_{16} = $\underline{\hspace{5cm}}_{10}$

7. Fill in the blanks...

There are $\underline{\hspace{3cm}}$ binary digits in a 16-bit word.

There are $\underline{\hspace{3cm}}$ hexadecimal digits in a 64-bit word.

There are $\underline{\hspace{3cm}}$ octal digits in a 32-bit word.

There are $\underline{\hspace{3cm}}$ octal digits in a 6-digit hexadecimal word.

There are $\underline{\hspace{3cm}}$ decimal digits in a 4-digit hexadecimal word.

8. Convert the following numbers into binary and hexadecimal:

i) 64.5_{10} = $\underline{\hspace{5cm}}_2$ = $\underline{\hspace{3cm}}_{16}$

ii) 225.25_{10} = $\underline{\hspace{5cm}}_2$ = $\underline{\hspace{3cm}}_{16}$

iii) 42.125_{10} = $\underline{\hspace{5cm}}_2$ = $\underline{\hspace{3cm}}_{16}$

iv) 10.1_{10} = $\underline{\hspace{5cm}}_2$ = $\underline{\hspace{3cm}}_{16}$

Are there any issues when storing decimal real numbers in a computer?