1. Regular Expressions

1. The set of all alphabetic strings.

Answer: ([a-zA-Z]+)

2. The set of all alphabetic words

Answer: \b([^\d\W]+)\b

3. The set of all lower case alphabetic strings ending in a b

Answer: ([a-z]*b)

4. The set of all lower case alphabetic words ending in a b

Answer: \b([a-z]*b)\b

5. The set of all strings from the alphabet {“a”, “b”} such that each “a” is immediately preceded by and immediately followed by at least one “b”

Answer: (b+a{0,1}b+|b)

6. The set of all words from the alphabet {“a”, “b”} such that each “a” is immediately preceded by and immediately followed by at least one “b”

Answer: \b(b+a{0,1}b+)\b

7. the set of all strings from the alphabet {“a”, “b”} that form the pattern a^nb^m where (n+m) is even; n>=0, m>=0, and (n+m)>0

Answer: a(aa)*b(bb)*|(aa)+(bb)+|(aa)+|(bb)+

2. Social Security Number

Answer:
\s((\d{2}[1-9]|[1-9]\d{2}|\d[1-9]\d)-\d{2}-(\d{3}[1-9]|\d{2}[1-9]\d|\d[1-9]\d{2}|[1-9]\d{3})|(\d{2}[1-9]|[1-9]\d{2}|\d[1-9]\d)\d{2}(\d{3}[1-9]|\d{2}[1-9]\d|\d[1-9]\d{2}|[1-9]\d{3}))\s

3. Telephone Number

Answer:

((\+(\b\d[1-9]|[1-9]\d)-(\d{2}[1-9]|\d[1-9]\d|[1-9]\d{2})-(\d{2}[1-9]|\d[1-9]\d|[1-9]\d{2})-(\d{4})\b)|(\+\((\b\d[1-9]|[1-9]\d)\)-\((\d{2}[1-9]|\d[1-9]\d|[1-9]\d{2})\)-\((\d{2}[1-9]|\d[1-9]\d|[1-9]\d{2})\)-\((\d{4})\b)\))